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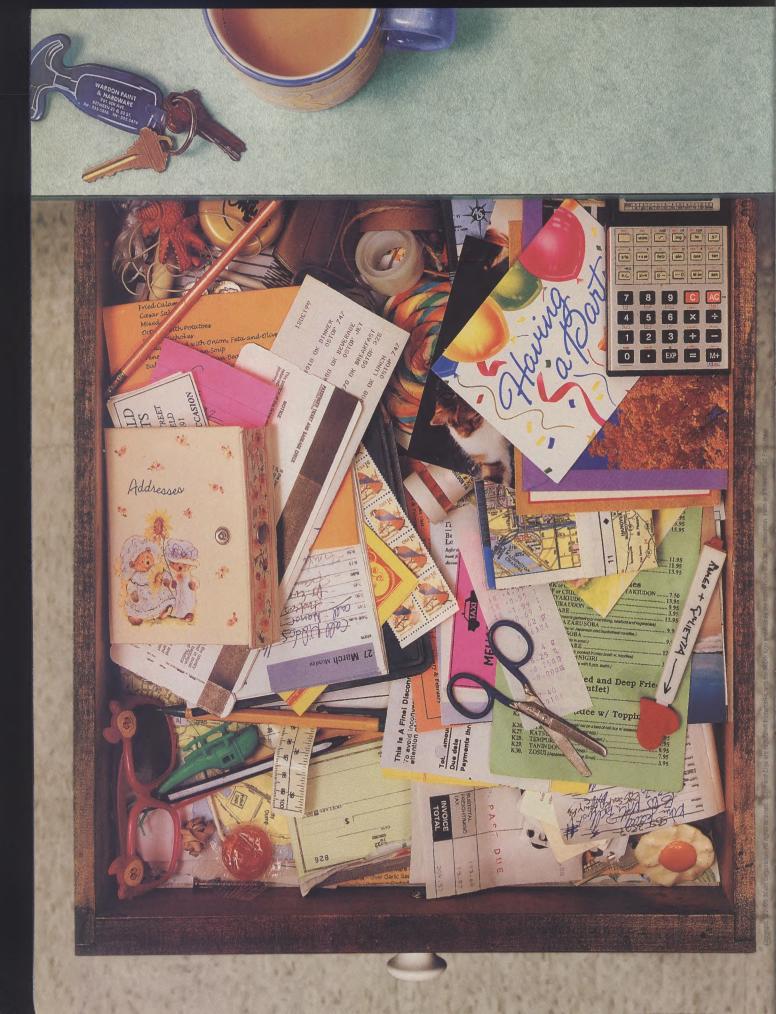
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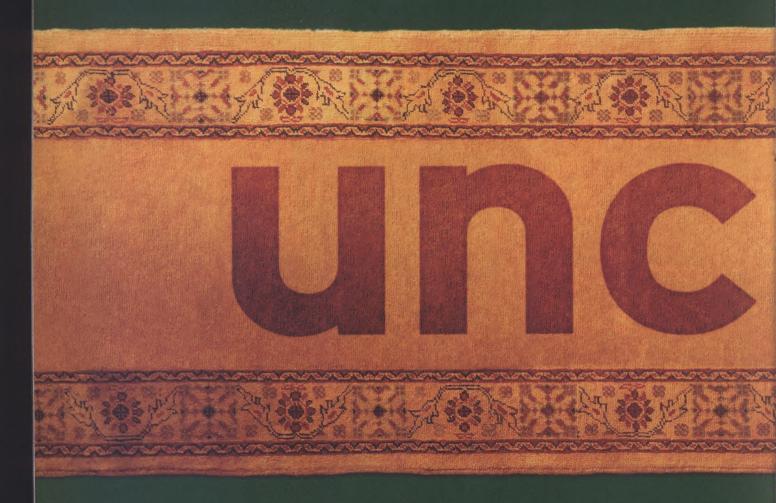
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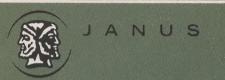
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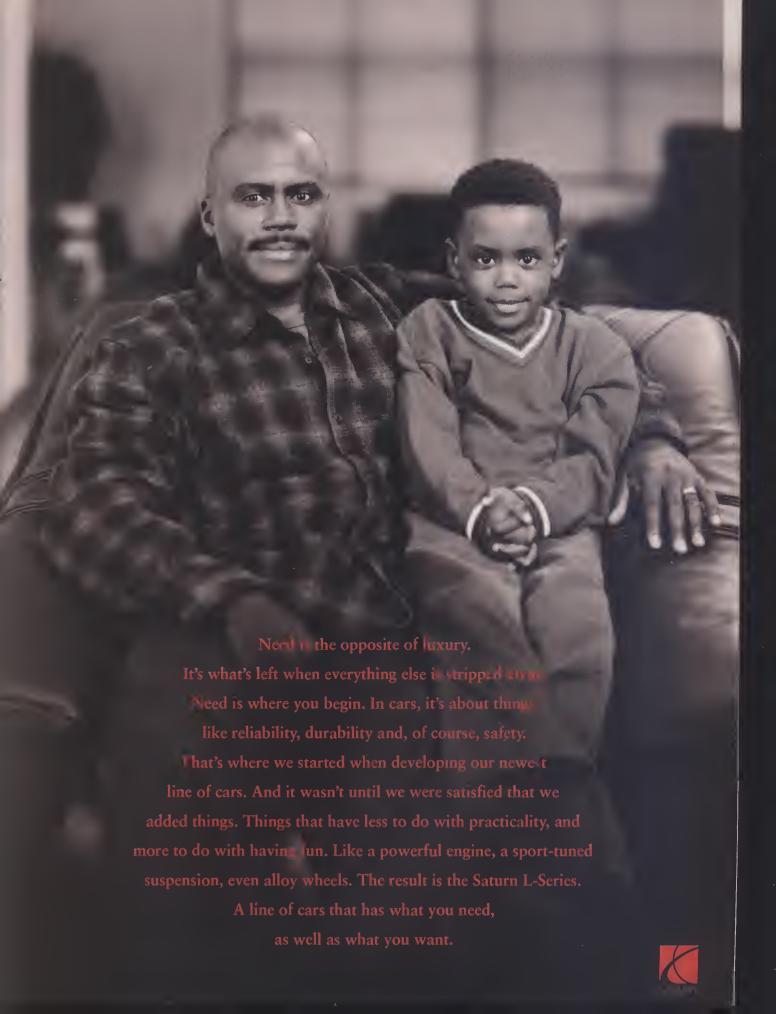


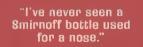


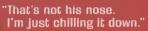


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> Clarke, the masterly author of 2001: A Space Odyssey, discusses artificial intelligence, artificial stupidity, and other wonders of technology

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SMELL By Ben Greenman What's that smell? It's your browser, starting to make scents

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TASTE By Steve Silberman With the help of a nifty little wafer, the Web hopes to connect to your tongue. But will we find communion in this tasty new matrix?

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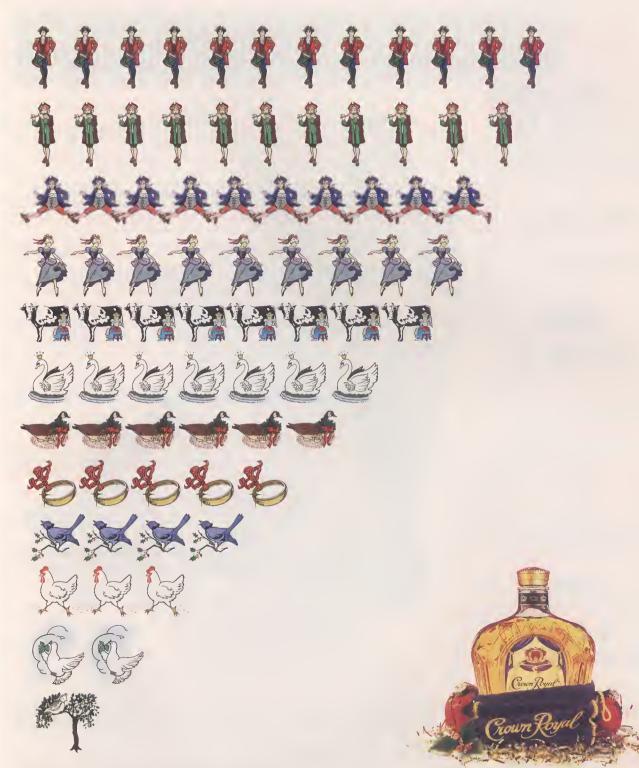
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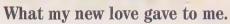
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Nuts About the Future

'VE SAID IT BEFORE IN THIS SPACE: YOU HAVE TO BE a little nuts to predict what will happen with the Internet, and more than a little nuts to bank on it. So this is our cashew-filled exercise, an entire issue tilted at the future. Why do we do it, besides enjoying the mental gymnastics? Because the Internet challenges you to think ahead—or be left behind. I'm not just talking about people in Internet businesses, who, as I write, are running for cover while blood from the dot-com wreckage runs through the (Wall) streets. I'm

talking about the rest of us, who know that engaging with the Net isn't something you do once, like learning to ride a bicycle. What's both frustrating about it and compelling is that it morphs and shifts its shape. In other words, you have to keep up. And that means trying to anticipate what will come next.

What better time to be contemplating the future than on the eve of 2001, that fabled year. So we begin our special section with a bit o' showbiz flair: Our columnist **ROGER EBERT**, a devotee of 2001: A Space Odyssey, reflects in "Only Connect" on how it's the Internet, rather than a malevolent version of the supercomputer HAL, that came along to change our lives. Meanwhile, the author of the original novella, grand old ARTHURC. CLARKE, talks to us about the science behind his story, and what he got right.

And that's also the theme of a roundup of eminent science fiction writers (plus one futuristic ex-politician) in our panel discussion, "Tomorrow Never Knows." We asked them all what they have predicted correctly in their fiction or career—as well as what

We continue exploring the issue's major theme with "Five Senses of the Web," in which JULIAN DIBBELL, JOHN ALDERMAN, BEN GREENMAN, LISA MARGONELLI, and STEVE SILBERMAN report on how the Internet and our culture may change, as we perceive them through our senses. Certainly you expected sight and sound, which is where we explore how what you see and listen to will be affected; what will surprise you is how taste, touch, and smell may evolve, too. Accompanying each of the essays are visual interpretations of the senses by five of the world's leading illustrators: BRAD HOLLAND, RALPH STEADMAN, JASON HOLLEY, JORDIN ISIP, and DAVID BRINLEY.

Sharp-eved readers (or at least those of you loval enough to have read us for several years—thanks,

> guys!) will note the return this month of an original columnist. ANGELA GUNN. After a hiatus spent sharpening her already wicked writing skills while sipping cappuccino in Seattle, Gunn comes back to tackle Internet ethics for us-a topic we're certain is inexhaustible, as we

2001 IS NOW: Open up your browser, Dave. search to know what's Net-right and what's plain-dumb. Our prodigal columnist will tell us which is which.

Finally, CHARLES MANN, whose in-depth reporting on matters digital has appeared in *The Atlantic* Monthly and elsewhere, begins this month as a contract writer for Y-Life. In "Global Swarming," he sketches the implications of one big idea—the profound human linkages being created by such technologies as Napster—in a way that's thrilling and thought provoking.

So drink it all in and be merry, because next month—well, next month isn't just 2001. It's also our Top of the Net issue, in which we name top names, take few prisoners, and spare no Net folly, no matter how nutzoid. Expect a good time and some seriously gnarled walnuts.

Bany Golor

Barry Golson, Editor in Chief

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OUR READERS EXPRESS THEMSELVES

WHO ELSE IS **WATCHING?**

Your special report on Internet privacy in the October issue was excellent. While many people might think that parts of it border on the paranoid, I can assure you it does not go far enough. In fact, the section "Hide! The Boss!" [page 107] offers dangerous advice.

The author, Jeff Howe, suggests using Hotmail, Excite, or Yahoo! Mail for personal e-mail. This is fine from home, but your boss can easily read any of these if you check them on your office network. There is software readily available that will not only capture the names of the sites you browse but also cache them centrally for the boss to view later. Clearing your own cache doesn't cut it. When you check anv e-mail from the office network, take it for granted that if the boss is not reading it, your computer services department most certainly is.

I downloaded off the Net some network-checking software that beeps every time someone checks his POP e-mail, then logs his username and password to the screen. Anyone in your company could download shareware that does the same.

Big Brother could be sitting beside you.

> -S. Anderson: @emirates.net.ae

NOTHING TO HIDE, EXCEPT...

Who really cares whether you have privacy on the Internet October '00, "Privacy in the Digital Age," page 98]? I want sites to know where I go on the Web. That way, banner ads I see will be about my interests like golf, car racing, and beer -rather than sewing, soap operas, and wine coolers. I don't care if my boss sees what I do

on my computer at work. He knows I do a great job, and that's what counts. I don't put down my job in chatrooms or on message boards. If I did, being fired would probably help me find a job I would like. rather than stay in one I didn't.

I'm not concerned about someone stealing my credit card number on the Internet, I read that the odds are better that I would be struck by lightning. Anyway, I wouldn't be liable for the charges.

If hackers were to troll around my computer by accessing it through my Internet connection, they would find notes about my fight with a siding company, pictures of my kids, a program that lets me donate to worthy causes for free, and templates for printing envelopes. Big deal. And if they erased something, I would just restore it with my backup. That's the end of my letter.

Now for the only paranoia you'll get from me: You do not have permission to use my full name or e-mail address in any of your online or offline publications or areas. The only reason for this is your popularity; I'm afraid I would get flooded with e-mails

> -N.L.: @gw.total-web.net

MORE MUNCHING

We all should now agree that there is little or no privacy when one connects to the Internet, if someone wants to track you. But you do not have to make it easy.

The first thing one must do is to block all cookies. They are not designed to help us, and so represent an interference in our lives that we do not need to tolerate. There are hardly any useful sites where one absolutely needs to use cookies.

By not using them, we will



find, eventually, that most useful sites will not require them.

> -Ellis Glazier: @cibnor.mx

WHAT HITLER KNEW

A misleading quote from Yahoo! *Internet Life*: "Today anyone on the Internet can find out more about what you read, think, and earn than the secret police of Stalin or Hitler could have learned." [October '00, "Nowhere to Hide," page 100]. I beg to differ. The Nazis, who murdered our non-lewish father. knew more about us children-my 12-year-old brother in Madrid and myself, two years older, in Switzerland-and used that knowledge to make him despair even more in his final days. I saw him in the Gestapo imprisonment headquarters in Berlin, and he begged me never again to visit him in that devastated state of his. He was a broken and sadly frightened man hoping in vain to protect his family!

Author Robert Scheer is right, though, when he tells us that the (U.S.) Internet has no respect for our privacy. That fact underlies the disparity between U.S. and European attitudes on this topic. Privacy is held in high esteem in Europe, where data mining is considered a criminal activity, and rightly so.

> -W.P. Jaspert: London, England

BOUND FOR CUBA

I tried to access the site you listed for "official trips" to Cuba in vour Travel & Recreation Web Guide October '00, page 155], CUBA TOURS NET-WORK [cubatoursnet.org], but kept getting a "You are not authorized to view this page" message. I even did a search to make sure I had the URL right. Maybe this is why only a third of U.S. visitors to Cuba are "legal"? I'm now off to check out "unofficial" means.

> -Leslie K. Yoder: @nachell.net

>> Apparently the site has gone down. The "not authorized" messaae vou aot is iust standard Web iaraon, and doesn't have anythina to do with legality or illegality. Either the page has vanished or the site is having server problems. That happens. - Ed. <<

E-BOOKS: I STAKED **MY CLAIM**

I sure get tired of hearing how Stephen King and all those others "invented" e-publishing [October '00, "E-Books: The Next Chapter," Click News, page 42]. My sites, THE TEXAS WRITERS' WEB [texaswritersweb.com] and BANDILLO PUBLISHING CO. [bandillo.com] have been up since July 1998. I didn't invent e-publishing, either, but I'm way ahead of King. No, I'm not Random House, but we little guys out here make contributions, too.

> -R.L. Smith II: @brooksdata.net

>> We never said that Stephen King invented e-books. After all, we called the piece "The Next Chapter." - Ed. <<

TURNED THE PAGE

I was very surprised to see what I consider soft porn in your magazine. The picture of Elizabeth Wurtzel in a see-through shirt is not what I consider

proper for this type of magazine ["E-Books: The Next Chapter"]. There are children, as well as adults, who read this magazine. It amazed me even more, when I read the section on e-books, that you just mention her name in passing but have to show a detailed picture of her. You could have simply given the name of a Web site that contains a picture of her for those who were interested.

-M.S.:

ON NAPSTER AND A NO-NO

Irecently started reading Yahoo!
Internet Life, and I find it enjoyable and worthwhile. Two things in the October issue made an impact:

- · Ion Katz, in "Fans Are Forgotten in Napster Flap" [page 64l, feels that the right to share culture overrides any intellectual-property benefits obtained by copyright. Ignoring the red herring about "a handful of big companies" owning shared culture, his new standard of right and wrong is based upon whether there are police sufficient to enforce the law. Given this, I think you should withhold payment for any articles Katz writes for you, and let him know you are just "sharing the culture."
- Gordon Bass, in "The Wireless Web: Please Hold" [page I16], starts with, "I wanted to free my ass and let my Web surfing follow." This adolescent "look at me, I can use bad words" approach hardly fits the tone of the magazine.

-Mike Bremseth: @earthlink.net

>>Regarding your second point: The author was alluding to a 1971 Funkadelic tune, "Free Your Mind...and Your Ass Will Follow." That makes it all better, now, doesn't it? —Ed.<<

MORE ON NAPSTER

In "Fans Are Forgotten in Napster Flap," Jon Katz gives the following reasons for why Napster and similar services shouldn't be punished for breaking copyright laws:

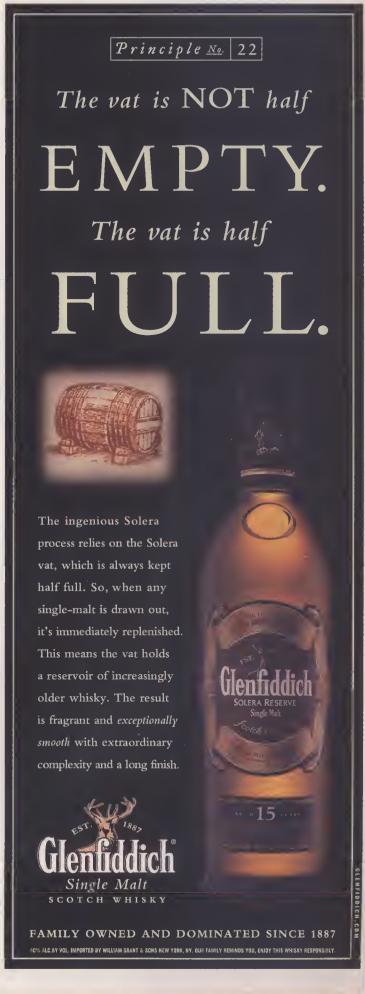
- People have been downloading stuff for free for so long that copyright laws should be changed to allow this to continue;
- Evidence shows that "CD sales [seem to] go up when MP3 downloads are greatest";
- If the Recording Industry Association of America wins against Napster, consumers will be the biggest losers.

I suggest that Katz tone down the hysteria routine. First of all, "I've been doing it for so long" is never a good criterion for determining what is legal and what is not. Neither is "It's so easy to do, and everybody is doing it." If we were to start applying this logic to other areas of life, then speed limits and laws against murder would have been abolished long ago.

Second, who says that downloading for free should be everyone's right? Sure, it's nice to be able to do this. But one person's right ends where another person's right begins. Napster has no legal right to allow people to swap music for free if the music's owners object.

Third, is Katz suggesting that we should enforce copyright laws only when evidence shows that the CD sales are hurt by free downloads? Come on, now! Either it's legal or it's not.

Katz is wrong in trying to make the argument that the Napster case is about the consumer. This case is about copyright protection. Let's not confuse the issue. If Napster were willing to pay RIAA and other copyright holders a certain amount of money for every transaction through its





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BACKCHAT

Web site, I don't think that anyone would be complaining.

The Internet is still part of the real world, and in the real world, there is still no such thing as a free lunch.

-Allan Vo: @aol.com

NAPSTER IN A NUTSHELL

Here's my two cents: I love Napster; I use it almost every day. And guess what? I'm never going to buy a record again. Why right law. If you create something—a song, a book, a Web site, and so on—you are the only person who can say how it should be distributed, free or otherwise. That means if the members of Metallica don't want their songs traded on Napster, it's illegal to trade their songs on Napster! And they can do whatever they want in order to take back control over what is legally theirs. This applies whether you sell your copied music or just give it away, despite what Friedman and countless other Napsterites may think.



would I? For the liner notes? I download every song I want and add it to my MP3 player or onto CDs. I also happen to believe that Napster is illegal. I completely agree that it's all right to record a tape for a friend, but when was the last time you recorded 2,000 tapes and gave them out to strangers?

-V.V.:

EVEN MORE NAPSTER DEBATE

In response to the letter by Elizabeth Friedman that was featured in the shiny new issue of *Y-Life* that appeared in my mailbox today ["Money for Nothing and Songs for Free," Backchat, October '00, page 25]: Friedman states that she doesn't "see how copying songs for free can be against the law." I think we can all agree that anyone who is following the Napster debate has to have heard about the little thing known as copy-

Metallica risks alienating its fans? Ha! If they're really fans, why don't they support the people whose music they like? If nobody pays for music, why would anyone want to make music in the first place?

The result will be that all music would have to be created by loosely organized bands in their basements in the time they don't spend at their jobs, because music couldn't be a "career" anymore. I don't want that to happen, and neither do you. That's why Napster is being fought, and *must* be fought, or the concept of owning what you create will be in grave danger.

-Stephan Ahonen: @wheezebucket.com

MAC ATTACK...

Yo, cutting-edge, on-the-cusp, totally hip *Yahoo! Internet Life.* Ever heard of the Apple Macintosh? No, didn't think so. Your magazine is so Windows-centric, you would

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BACKCHAT

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think there wasn't a Mac on the planet. The only hint I see of Macintosh computers in the pages of *Y-Life* are the ads that show Compaq's sad attempts at hijacking the look of the iMac. Shame! In August you ran a story on MP3 technology ["Free Your Music," page 119], but failed to mention Macster. How about Audion? It's one of the coolest MP3 players out there—and created for the Mac platform.

-J. Clements:

>> We do tend to focus more on Windows, since that's the dominant operating system in terms of its number of users. You'll be glad to hear, however, that this is being written on a Mac.—Ed.<<

...AND HACK ATTACK

I think the world would have been a safer place if the U.S. government had put Kevin Mitnick in charge of CIA intelligence-gathering instead of tossing him in jail ["Free Kevin Mitnick! (Oh, He Is?)," October '00, page 140]. Mitnick should send a bill to every giant corporation whose networks he was able to hack his way into (for his "services" in demonstrating the need for more-secure computer systems).

-Wiley C. Rose: @cs.com

PAGING MR. BODINE

I am so tired of people who stereotype rural residents as simpletons. Gordon Bass's review of Intel's Dot. Station in the October issue [Cool Tools, page 73]—calling it a simple device that would be good for our "country cousins" and "Jethro"—was insulting. The U.S.A. is wired from end to end, so we all grow up watching the same shows, hearing the same music (although preferences vary), and surfing the same World Wide Web.

Wake up, Mr. Bass. Intelligence cannot be measured geographically!

-Mad in Mayberry: @yahoo.com

>> From the author: I grew up across the street from a horse pasture in College Station, Texas, and have cousins named Lottie and Lula-Mae. I'm obviously still in denial.—Ed.«

WHO'S A QUACK?

As a subscriber to *Y-Life*, I usually bow to your judgment on the sites you write about. However, I was appalled when you listed under "Gold Star Sites: Health Sites You Can Trust" [October '00, page 88] a listing for QUACKWATCH [www.quackwatch.

com]. Since its inception, this site has done nothing but put out a campaign of disinformation and outright lies about the chiropractic profession.

If you want to balance this, how about listing the CALIFORNIA CHIROPRACTIC ASSOCIATION [www.calchiroassn.org] or the CHIROPRACTIC RESOURCE ORGANIZATION [www.chiro.org]. These are sites that give factual information about chiropractic (both good and bad) and will give your readers a site they really can trust.

-Dr. Kenneth Martin:

ON NET MADNESS

Y-Life should be proud of the thought-provoking articles it features in each issue. However, Austin Bunn missed the boat in his exaggerated effort to expose sociological studies of Internet users [July '00, "Internet Madness!," page 100]. For an article introduced as one that "pulls back the curtain on some shaky science," his does little more than take the predictable shots at the studies, rather than offer any objective thinking about the behavior of Internet users.

He could have observed the obvious: Computer users are inherently isolated. Although there are "communities" out there to visit—at least, virtually—going online is no face-to-face experience. He could have asked: Are there many who opt for online relationships because they can't handle real ones? Can Net surfing be a social-avoidance mechanism, much as television can be?

Bunn was trying too hard to discredit the methodologies of the studies (and studies are always easy targets for that), yet he invested no energy in raising questions about how the Internet fits into a contemporary American society that appears to be as disconnected as ever.

-Burr E. Anderson:

RELOAD:

The "Self Service" article [page 115] in our November '00 issue incorrectly reported the source of the virtual-dressing-room technology that JCPenney is using at its JUST4MEPETITE.COM, JUST4METALL.COM, and JUST4MEPLUS.COM sites. The company is actually using technology from MYVIRTUALMODEL.COM. We regret the error.

We know you're not shy. So drop us a line at yilmail@ziffdavis.com.



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SITE ADDRESS GUIDE

A TEAR-OUT INDEX OF THE URLS IN THIS ISSUE

FEATURES

FUTURE SHOCK (PAGES 122-123)

□ SETI@HOME [setiathome.ssl.berkelev.edu]

FIVE SENSES OF THE WEB

(PAGES 125-144)

- □ ARTIFICIAL VISION FOR THE BLIND
 [artificialvision.com]
- ☐ EMAGIN [emagincorp.com]
- ☐ MICROVISION [mvis.com]
- □ PACKETVIDEO [packetvideo.com]
- ☐ ISCAN INCORPORATEO
 [iscaninc.com]
- □ LISTEN.COM [listen.com]
- MP3.COM [mp3.com]
- ☐ GOTOWORLO.COM VOICE PLUG-IN [gotoworld.com/freestuff/downloads/texttospeech.htm]
- ☐ GIG.COM [gig.com]
- □ **ZOOM PS-02 PALMTOP STUDIO**[samsontech.com/zoom/personal.html]
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 [rocketnetwork.com]
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- ☐ SENSORYNET.COM [sensorynet.com]
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- ☐ THE ARK OF TASTE AND SLOW FOOO PRAESIOIA [www.slowfood.com/activities/ark/ presidia.html]
- □ LOGITECH [logitech.com]
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- □ IMMERSION [immersion.com]
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- SAFESEXPLUS
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- □ CYBERSUIT [cybersexsuit.com]

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- □ POINTERA [pointera.com]
- ☐ GPULP [gnutellang.wego.com]
- □ UPOC [upoc.com]
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- SETI@HOME
 [setiathome.ssl.berkeley.edu]
- □ ENTROPIA [entropia.com]
- □ MOJO NATION
 [moionation.net]

HOME, WIRED HOME (PAGES 156-167)

SKYHOME

[www.skypadtech.com]

DEPARTMENTS

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- ☐ ANNA PAQUIN
- [clubs.yahoo.com/clubs/annapaquin]
- [fu**edcompany.com]
- □ JUDE LAW
 [clubs.yahoo.com/clubs/judelaw]
- □ PLANETCHRISTMAS [planetchristmas.com]

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- ☐ FIRSTGOV [firstgov.gov]
- □ BRITANNICA.COM [britannica.com]
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- TRAILERVISION
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 [rioport.com/RioTrack/I,1366,,00.html?
 tk_id=2042533]
- SKEPTICRADIO.COM [skepticradio.com]
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- SHOUTCAST [shoutcast.com]
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 [expn.go.com/xgames/av]
- [msnbc.com/news/I53800.asp]
- □ NFL CHATS [nfl.com/chats]
- □ DIRDA ON BOOKS
 [washingtonpost.com/wp-srv/liveonline/books/dirda.htm]
- □ DAILY PARENT CHAT
 [family.go.com/Features/family_0000_0I/dony/ChatIndex]
- □ QUOTE.COM [clubs.lycos.com/live/ ChatRooms/Calendar.asp?Area=1]
- URBAN LEGENDS AND FOLKLORE CHAT [urbanlegends.about.com/mpchat.htm]

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- □ SOCKET [get-socket.com]

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- [metmuseum.org/store]

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- □ NIKE [nike.com]
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 [pineusa.com]
- SEIKO INSTRUMENTS USA [seikosmart.com]

TOUCHED BY THE NET (PAGES 90-94)

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- □ YAHOO! WEBRING
- [webring.org]
- ☐ THE GENEROSITY GAME [generosity.org]
- □ KINDNESS SEARCH-ENGINE [www3.bc.sympatico.ca/kindness]
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- ☐ ELIZABETH GLASER PEOIATRIC
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- ☐ YAHOO! GREETINGS [greetings.yahoo.com]
- ☐ TEACH FOR AMERICA [teachforamerica.org]

OLD WAY/NET WAY (PAGES 96-98)

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[tesla.csuhayward.edu/cappstreet/ urban/outlaw/recipes.html]



- □ SOUTHERN FRUITCAKE [mbgoodman.tripod.com/ sandrasrecipe.html]
- ☐ TEMPLE BETH TORAH: HANNUKAH
 [www.ridgenet.net/~robin/Temple_8eth_
 Torah/hannukah.htm]
- □ JCN'S GREAT COMPUTERIZEO
 OREIOEL GAME [jcnl8.com/spin-ns.htm]
- ☐ THE OREIDEL GAME
 [www.billybear4kids.com/holidays/hanukkah/dreidel2.htm]
- □ CAFEDVD.COM [cafedvd.com]
- □ NETFLIX.COM [netflix.com]

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(PAGES 103-104)

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 [fepg.net]
- □ SURPRISE.COM [surprise.com]
- □ REPLACEMENTS, LTD.
 [replacements.com]
- □ U.S. NEWS ONLINE: BEST HOSPITALS FINDER [www.usnews.com/usnews/nycu/ health/hospit/tophosp.htm]
- □ ECOMP [ecomponline.com]
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 [yoursportsmail.com]
- □ BOOK FORAGER
 [branching-out.net/forager]
- □ HEALTHGRAOES [healthgrades.com]
- □ LIVEWIRE! BROAOCAST
 [eastbaytech.com/livewire.htm]
- □ OOIGO [odigo.com]
- ☐ PROTRACK 99 [dakotafit.com]

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- □ OBSCENE INTERIORS
 [Justinspace.com/obscene/oiintro.html]
- □ BRITNEY'S GUIDE TO SEMICONDUCTOR PHYSICS [britneyspears.ac/lasers.htm]
- □ CRACKERHEAD MOOD CHOOSER
 [academic.marist.edu/carob/mood]
- □ LEONARD NIMOY SHOULD
 EAT MORE SALSA FOUNDATION
 [Insemsf.com]
- ☐ HALFBAKERY [halfbakery.com]

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- □ MGM.COM [mgm.com]
- □ ALLRECIPES.COM [allrecipes.com]
- □ WEBVAN [webvan.com]
- ☐ SOUNDS OF THE WORLD'S ANIMALS
 [georgetown.edu/cball/animals/
 animals.html]
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- SPORTS AUCTION [sportsauction.com]
- poppolitics.com
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- ☐ CYBER-SEUSS
 [www.afn.org/~afnI530I/drseuss.html]
- □ NUT IN THE HAT
 [fadetoblack.com/nutinthehat]
- □ IMIX.COM [www.imix.com]
- □ MUSICMAKER.COM [musicmaker.com]
- □ AMAZON.COM [amazon.com]
- □ PAUL WINTER'S WORLD OF LIVING MUSIC: SOLSTICE [www.livingmusic.com/solstice]

- ☐ SHAQUILLE O'NEAL [shaq.com]
- □ KOBE BRYANT: MY OFFICIAL WEB SITE
 [www.kobebryant.com]
- □ RASHEEDWALLACE.COM
 [rasheedwallace.com]

HEALTH & FITNESS (PAGE 182)

- □ PHYS.: NUTRITION
 [phys.com/b_nutrition/00home/home.htm]
- DELICIOUS OECISIONS
 [deliciousdecisions.org]
- ☐ THE VEGETARIAN RESOURCE GROUP
- CNN.COM: DIET & FITNESS
- ☐ FLORIDA MEDICAL MALPRACTICE
 WEB SITE [floridamalpractice.com]
- ☐ MCCULLOUGH, CAMPBELL &
 LANE: SUMMARY OF MEDICAL
 MALPRACTICE LAW
 [mcandl.com/introduction.html]
- THE ONLINE MEDICAL
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 [a-r-m.org]

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- □ A CHRISTMAS TREE
 STORE & NURSERY
 [christmastrees-r-us.com]
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 [novaspace.com/XMAS/Xmas.html]
- ☐ ZDNET: GAMESPOT [gamespot.com]
- GAMERS.CDM [gamers.com]
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- [kitschvkoo.com]
- □ FRAGCITY.COM [fragcity.com]
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- ☐ ART CENTER EXPORTS
- [awrem.com/tanah/art-center.html]
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- ☐ BIKERMANIA [bikermania.com]
- MOTORCYCLE ONLINE [motorcycle.com]

- □ MOTORCYCLESHOPPER.COM [motorcycleshopper.com]
- ☐ BABE ON HO'S HARLEY OOT COM [habeonhd.com]
- ☐ THE MOTORCYCLE MUSEUM ONLINE [tower.org/museum]
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- ☐ TWO RAINY SIDE GARDENERS: WINTER VEGETABLE GARDENING [rainvside.com/edibles/winter_veggies.html]
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- ☐ GARDEN.COM [garden.com]
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- ☐ THE COALITION TO STOP GUN VIOLENCE
- ☐ GUN CONTROL IN THE UNITEO STATES [soros.org/crime/guncontrol.htm]
- ☐ FIREARMS LITIGATION CLEARINGHOUSE [firearmslitigation.org]
- □ VIOLENCE POLICY CENTER [vpc.org]

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- ☐ ARTS EQUCATION PARTNERSHIP [aep-arts.org/aephome.html]
- COMING UP TALLER [www.cominguptaller.org]
- ☐ ARTS FOR LEARNING [arts4learning.org]
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- ☐ MENSA WORKOUT [mensa.org/workout]

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- □ ICAB [icab.de]
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- □ CNET INTERNET: BROWSERS [browser.com]
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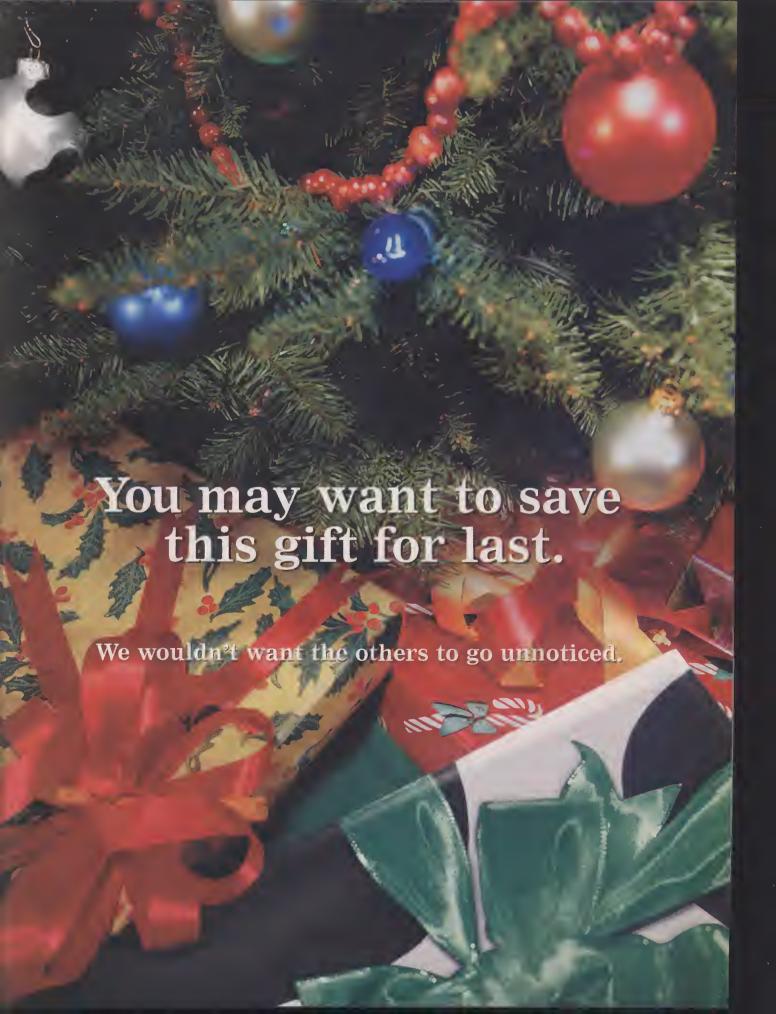
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- □ PROTONIC.COM [protonic.com]
- □ ASK-A-TECH.ORG [ask-a-tech.org]
- □ EXPERTCITY.COM [expertcity.com]
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- □ EUDORA [eudora.com]
- ☐ FINEPRINT [fineprint.com]
- □ LOCKIT [www.lockit.com]

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- ☐ SEARCH.GO.COM [search.go.com]
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PEOPLE, PLACES, AND TRENDS ON THE NET 12.00

EDITED BY RON BEL BRUNO

NETOBSESSIONS



ANNA PAQUIN Major roles in X-Men and Almost Famous boosted her Yahoo! Clubs count from two to I3. Not bad for a mutant groupie. Start @ ANNA PAQUIN [clubs. yahoo.com/clubs/annapaquin]

DOT-COM DEATHWATCH

Webster's calls it schadenfreude enjoyment over the misfortune of others. An estimated I25,000 surfers a week who visit the FC daily digest of dot-com failure rumors call it a fun read. Vie for points in the dead pool @ FU**EDCOMPANY.COM





memorable site

Follow the Light

H, THE HOLIDAYS. TIME AGAIN TO BOW TO the god of consumerism, test the limits of your buying power, and gawk at colored lights. *Thousands* of them. In the midst of the 1973 energy crisis, Chuck Smith adorned his Tennessee home with five strings of bulbs; last year, the light total topped 143,000.

At PLANETCHRISTMAS [planetchristmas.com],

he chronicles his luminous efforts while guiding newcomers in mastering the underrated skill of homegrown light displays. What do Smith's neighbors think? Well,

VISIT Y-LIFE'S ARCHIVE OF MEMORABLE SITES AT YIL.COM/ MEMORABLE.

they haven't enjoyed the tour buses much. - M.G.

THE CLICK CLIQUE: JEREMY CAPLAN, JONATHAN N. COLLINS, BILGE EBIRI, MEGAN GERRITY, LYNN GINSBURG, GAIL HENRY, BARBARA KURGAN, OAVIO KUSHNER, MARC SALTZMAN. WRITE TO CLICK@ZIFFOAVIS.COM. REAGERS ONLY, PLEASE!

Which Way to the Web?

Pie-in-the-sky wireless Web growth predictions abound. But what do these rosy forecasts hold for the future of homebound Net access?

OU KNOW THE TV COMMERCIAL: A man in a black trench coat coaxes keyboard-bound Web surfers to get outside and browse using mobile phones. But we know his trench coat is shielding him from the cold, hard truth: For the most part, cell surfing means five-line monochromatic displays, 14.4Kbps access, and a paltry selection of Web sites—at least, for now.

"The next five years will forever change wireless communications." says Dave Jackson, senior analyst at Cahners In-Stat Group. In 1999, a mere 4 million people actually accessed the Internet via wireless. But at the same time, about 170 million people worldwide were using wireless data services, primarily to send and receive short text messages. By 2004, the number of surfers accessing the Web via cell phones or PDAs (such as the Palm VII) will reach 743 million globally, according to the firm's projections.

With that kind of optimism, should we expect PC-based Web surfing to slowly fade away? In Japan,

SURF-BORED? New ways to make wireless Web access more practical may soothe your ennui.



there's already a shift in that direction. About 25 percent of Japanese households have home Internet access, but only 11 percent of households have a PC. Cell surfing accounts for the difference.

In the U.S., by contrast, 60 million homes access the Web via traditional wired means, and 100 million people subscribe to wireless phone services. But of the latter group, only 4 percent are using wireless data systems. So traditional PCs are expected to remain viable Stateside. "In the U.S., people are accustomed to the 17-inchmonitor Internet experience," says Jackson. That doesn't mean wireless Webservices won't evolve quickly, he adds—particularly a new generation of reminder services, shopping agents, and travel helpers.

That's all about tomorrow. Right now, reports In-Stat, the bulk of global wireless data traffic consists of considerably less-sophisticated short messages typed on tiny telephone keypads. During one 30-day span earlier this year, for example, 8 billion short messages were sent (mostly in Europe). The most common message among them: "Where are you?"

-J.N.C.

quotables

"All of it was for fun and games, and putting me in iail for want that to happen again. can find other stuff for fun."

-JONATHAN JAMES. 16. who hacked into computers at NASA and the Pentagon

"E-books going to go....I want to be on very affectionate terms with a book."

-Literary critic HAROLD BLOOM



NETRRIEFS 12/00

MIXED MESSAGES America Online has quietly been working on a merger of its AOL Instant Messenger and ICQ networks. The project, certain to be a boon to the services' combined membership of 140 million users, would also make it harder still for AOL's IM competitors to create and maintain compatible platforms. As a result, the FCC may intervene and require AOL to open its system....

CIAO TO THE NAKED WEB?

More U.S. public libraries are using Web software filters, according to the Public Libraries and the Internet 2000 study. About one in four libraries examined use fil-

ters; that's up IO percent from the 1998 proportion....

SPEAKING OF FILTERS The Chinese government is at it again, shutting down Net cafés in an effort to raise the nation's "moral tone." Hardest hit: cafés and computer centers that let teenagers

play Quake, Oiablo II, and other games....GOVERNMENT CEN-TRAL Surfers can now access the 20,000 Web sites operating under the aegis of the federal government at FIRSTGOV [firstgov.gov] SEPTEMBER SWAN SONGS According to statistics from the outplacement firm Challenger, Gray & Christmas, U.S. Net companies cut 4,805 jobs in September, more than double the number lost in July. There's nothing merry about this Christmas report.... -MG

ACQUADI FOR MEN

GIORGIO ARMANI

Bloomingdale's

ACQUA DI GIORGIO ARAIAM

POURTIONAL

R GLICK! NEWS

Save!

MART MOVES

Delete! PEOPLE BRIEFS/12.00

...AND DUBIOUS DEEDS

ORSCURE REFERENCES 'R' US

Flowers for Algernon? The Rosetta stone? Dennis Miller's stream of wry allusions on ABC's Monday Night Football puts the smart in smart-ass. For the rest of us, BRITANNICA.COM's Annotated Dennis Miller decodes the commentary. But you knew that, right?

GOT A SAVE OR DELETE? VISIT TO POST PRAISE OR CRITICISM

CALL YOUR AGENT

Dave Eggers, publisher of the quietly irreverent literary zine and Web site MCSWEENEY'S [mcsweeneys.net], is now publishing books. And this is no joke: Eggers is pledging to pay authors

100 percent of the profits on their titles. First up: The Neal Pollack Anthology of American Literature, a collection of works by the McSweeney's regular.

LOVE'S LABOR'S COST

When all was said and litigated, MP3.COM owed Universal Music Group up to \$250 million for copyright violations. Now Universal is under threat of suit by Courtney Love for a cut of the booty. Start a riot, grrrl!

USE IT AND LOSE IT

Antsy about e-shopping? American Express has the card for you. Sign up for PRIVATE PAYMENTS [americanexpress.com/privatepayments] and get a single-use card number for each online purchase. Unfortunately, your bill is not disposable.

FRESH START ON AOL

Embarrassed by your America Online master screen name—the one you can't delete? AOL now lets you launch a new account using one of your secondary monikers. Just choose the desired name, open a second account with it, and bid a fond farewell to WillStrip4Cash.

JUST MAKING CHANGE

AMAZON.COM's "dynamic pricing" test gave discounts on DVDs to first-time Amazon shoppers, while return customers paid full price. Following a Web-wide outcry, the retailer pledged reimbursements to all those who had been charged full freight. All's well that ends well.

PARTY OF ONE? All Rodman, all the time.

FLORIDA OR BUST

VOYEURDORM [voyeurdorm.com], a college coed version of CBS's Big Brother snoozer, went above and beyond the call of vérité recently when its Webcast featured excerpts of one Sunshine State dorm resident's breast-enlargement surgery. Wasn't Carnie Wilson's intestinal look-see enough?

THE TURNING OF THE WORM

For \$20 a month, RODMANTV [rodmantv.com] delivers the day-by-day exploits of the former NBA star---whether he's "stumbling in from a late night of club-hopping" or grabbing a bite in the kitchen. We'll opt for Seventh Heaven reruns, thanks.

NEVER, NEVER OMIT NEVER

We're busting your move, AMAZON.COM. The bookselling giant's new privacy notice omits the most vital information: how to opt out of Amazon's personal data-sharing program, which could formerly be done simply by sending an e-mail message to never@amazon.com. We're waiting.

TWO WRONGS CAN'T **BRING BACK KNIGHT**

When former Indiana University basketball coach Bob Knight got tossed after scrapping with a student, Knight-loving surfers bombarded the freshman's family with threatening e-mail. Foul!

SPY VS. SPY

The French government has vehemently opposed Echelon, the U.S. and U.K.-sponsored network that monitors global digital traffic. Meanwhile, amid the lush orchards of Bordeaux, France has been nurturing a satellite interception station of its very own. Dubbed Frenchelon by the

Yanks and Brits who uncovered it, the site tracks digital transmissions over the Atlantic and Indian Oceans.

PARKS PREVAILS

Civil-rights heroine Rosa Parks gained ownership of the domain name [rosaparks. com1, thwarting an Oklahoma man's plan to auction it off. The URL



will point to a resource on Parks (above) and the African-American civil-rights movement.... SPEAKING OF **HEROINES** Singer

Joan Osborne has launched HEROINE [heroinemagazine. com], a zine that profiles the lives of inspiring women....GOOD

WILL SPREADING One lucky scribe who submits a screenplay to Ron Affleck and Matt Damon's GREENLIGHT [projectgreenlight. com] will walk away with a movie deal. The site. launched in coniunction with Miramax and HBO, will announce a winner in March.... **GOING DIGITAL In** September the Beastie Boys' Grand Royal label announced that all new releases will be issued simultaneously on CD and in digital download format....WATCH **OUT, STEPHEN** KING Bill Cosby's American Schools: The \$100 Billion Challenge,

an e-book, will be pub-

COM this winter. - M.G.

lished by IPUBLISH.

mile or minited

cut the cord

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download to your Palm VII™ handheld or internet-ready cell phone check your current flight status/gate info/itineraries whenever wherever



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FILM

Some movies depict interpersonal relationships and the unbearable cruelty of modern life. Other movies, such as this month's VERTICAL LIMIT [verticallimit. com], send Chris O'Donnell and Bill Paxton off to scale a mountain in subzero conditions. Visit the official site for an adrenalinepumping trailer and loads of pics. then trek to **MOUNTAIN INN** [www. mountaineers.net], a climbers' travel, advice, and accessories hub. For more-specific tips on ice-climbing in North America, try THE COLO MOUNTAIN PAGE [www.cs. berkeley.edu/~qtluong/mountain/ ice], which features a useful FAQ section, mountain ratings, and wouldn't you know it—the latest thinking on ice-screw placement. ...Is Jim Carrey the perfect guy to play THE GRINCH [meanone.com], or what? Don't miss the trailer for the new movie version of the Dr. Seuss classic How the Grinch Stole Christmas at the official site-though you'll find more-

ABOVE: Jim Carrey is the Grinch. RIGHT: Blues empress Bessie Smith.

thorough coverage at the massive fan site JIM CARREY ONLINE [iimcarrevonline.com], which packs blooper footage from his films (funny); documentation of Carrey sightings (scary); and Carrev-related screen savers, background images, and programs (just plain strange—a Jim Carrey calculator?). Can't shake the Grinch's spirit? Bring your bad soul over to BAH HUMBUG! I HATE CHRISTMAS! NYAH! [angelfire. com/oh/BahlHateChristmas], a jeremiad against all things Noel. (For some non-Grinch Seuss sites, see page 178.)

MUSIC

RHINO RECORDS [rhino.com] recently released Rhapsodies in Black: Music and Words from the Harlem Renaissance, a four-CD anthology of songs and poetry from African-American performers of the jazzage (1918-35). THE HARLEM RENAISSANCE [library.thinkquest.org/26656] highlights the works of writer Langston Hughes and musician Louis Armstrong, among other artistic luminaries.

EXHIBITS

If the U.S. has contributed anything to world architecture (besides, of course, the Golden Arches), it's the skyscraper. And until January 15, Skyscrapers: The New Millennium at the THE ART INSTITUTE OF CHICAGO [www.artic. edul celebrates the beauty of these steel-and-glass paeans to capitalism through drawings, plans, and models. For true aficionados, THE SKYSCRAPER MUSEUM [skyscraper.org] fea-



WHEREWHEN

CATCH IT LIVE *

WEEKLY GUITAR LESSONS

From jazz to grunge. [www.emplive.com/ create/weekly_lsn/ weekly.aspl

ONE STEP BEYONG

Get down with the ska/ reggae upbeat.

FOLKSTAGE

Live folk performances from WFMT-FM Chicago. [wfmt.com/programs.htm]

GET IT ANYTIME

SOUTH PARK

Clips almost as fresh as Chef's daily specials. [shockwave.com]

TRAILERVISION

Trailers for movies that don't exist. What more do vou need to know [trailervision.com]

THIS OLO HOUSE WER CAM

Renovation views refreshed every two minutes [pbs.org/wgbh/ thisoldhouse/works/ webcam]

ASTOUNDING SPACE THRILLS

Long-running sci-fi comic. fastoundingspacethrills.

CREATURE COMFORTS

Classic from Aardman [atomfilms.com]

ME TALK PRETTY ONE DAY

David Sedaris reads an excerpt from his latest book. [rioport.com/ RioTrack/ 1,1366,,00 html? tk_id=20425331

SKEPTICRAOIO.COM

Host Tim Kammer takes on paranormal issues. [skenticradio.com]

*All times are Eastern.

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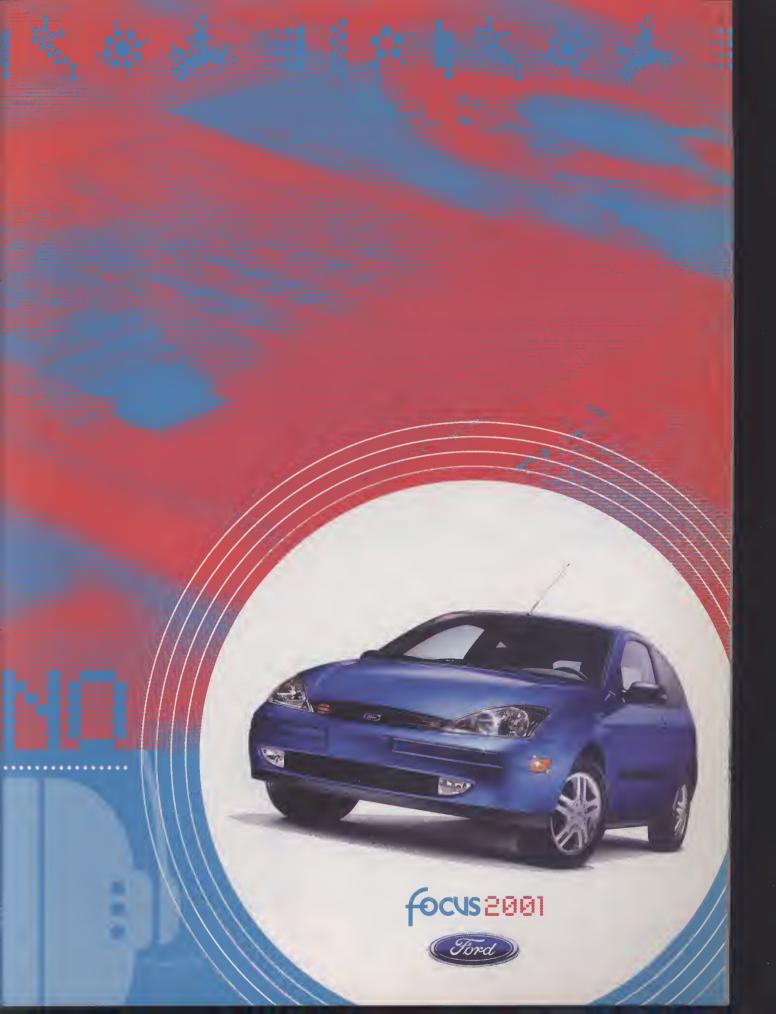
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GICK HEADS UP WHAT'S ON, WHAT'S NEW

Weaned on Bootlegs?

At WeenRadio, the brothers Gene and Dean showcase a noncontroversial means of finding new music



HILE METALLICA, COURTNEY LOVE, AND THE feds weigh in on the pros and cons of Napster, Gnutella, and similarly controversial ways of grabbing tunes, you can explore alternative agents of change in the music space. The surrogate brothers Ween give die-hard fans all the music they can handle at WEENRADIO.COM [www. weenradio.coml. And the two rockers do it without throwing themselves—or their label—to the dogs.

The site spins just about every song the band has performed, be it live or in the studio. It's not just a gift for Ween freaks; it's a model for the future of music distribution online.

Though higher-profile bands like the Smashing Pumpkins have unveiled similar Net radio outlets, Ween's is the most elaborate. It also nurtures its fans' bootlegging efforts by featuring exclusive concert cuts. "We've always had an open taping policy at our shows," Dean says. He cites the Grateful Dead as the band's role model; Deadheads have taped and traded the group's shows for decadeswhile also buying albums and maintaining the band's commercial success.

To hear Ween Radio, listeners must first download

can request tracks; accompanying lyrics and song details appear as the tunes play. Dean doesn't expect his

site to detract from the band's success. If anything, it should help his following to grow. "I like to think that people will still buy our records," he says. -D.K.

the SHOUTCAST [shoutcast.com] plug-in, which works with digital music players such as Winamp. Shoutcast streams music, so there's no downloading or storing going on, as there would be with MP3 files. It's essentially radio via your computer.

For Ween, reaching fans online is vital. "We're not played on the radio or MTV," says Dean. By posting music on the site for the past few years, he has kept fans in tune. Today, the full-blown Ween station features songs from a regularly updated batch of concerts alongside original studio recordings culled from a range of works including Ween's first album, God Ween Satan, and the band's current White Pepper. Fans

WHEREWHEN

If you missed the Xtreme games, relive them here.
[expn.go.com/xgames/av]

GO CHAT

IMUS ON MINBO

Hang with fellow fans during the show. [msnbc.com/news/ [53800.asp]

NEL CHATS

Coaches, players, and analysts shoot the [nfl.com/chats]

DIRDA ON BOOKS

Informed commentary from a senior editor of The Washington Post. [washingtonpost.com/ wp-srv/liveonline/books/ dirda.htm]

DAILY PARENT CHAT

Wired mums and dads [family.go.com/Features/family_0000_01/dony/ ChatIndex]

QUOTE.COM

Financial advice from guest experts. [clubs.lycos.com/live/ ChatRooms/Calendar. asp?Area=[]

URBAN LEGENDS AND FOLKLORE CHAT

Kidney thieves, million-dollar giveaways, and other hokum. [urbanlegends.about. com/mpchat.html

*All times are Eastern.

overheard

"When I was four, I ate an entire container of Parkay margarine. For some reason. I felt if I ate all the margarine...the tub would say 'Butter!'"

-Comic MARGARET CHO in a Yahoo! Chat

ABOVE: Radio stars Gene (left) and Dean Ween. RIGHT: The cathartic Margaret Cho.

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GICK GAMES

TOPDEMOS

The 10 most popular downloads at Нарру Рирру

- TONY HAWK'S PRO SKATER 2
- 2 NO ONE LIVES FOREVER
- DELTA FORCE LANO WARRIOR
- 4 GRAND THEFT AUTO 2
- AGE OF EMPIRES II: THE CONDUERORS
- 6 CARMAGEDDON TOR 2000
- STAR TREK VOYAGER: **ELITE FORCE**
- 8 SUPERRIKE 2001
- 9 SUPERBIKE 2000
- IO V-RALLY EXPERT **FOITION 2**

Rankings reflect downloads at [happypuppy.com], week ending 9/22.



TOPSWAPS

The most-swapped games at SwitcHouse

- 1 THE SIMS
- 2 CRAZY TAXI
- 3 HALF-LIFE
- 4 METAL GEAR SOLID
- 5 FINAL FANTASY VIII
- 6 GOLDENEYE OD7
- 7 FINAL FANTASY VII
- 8 LEGEND OF ZELDA: OCARINA DE TIME
- WWF SMACKDOWN
- 10 RESIDENT EVIL-CODE: VERONICA



[switchouse.com]

Real Live Net Millionaires

Startups? Stock options? Long hours? Nah. These surfers simply played a few games and won big

HAT WAS THE NAME OF THE FIRST CANINE hurled into space? Kelly Balmer knows it was Laika, and possessing that factoid has made her a millionaire. You've read ad nauseam about the gains (and losses) of the Net elite. But amid the noise of the burgeoning Net industry are some lesser-known nouveaux riches just like Balmer.

LUCKY LADY: Surfer Kelly Balmer leveraged her trivia smarts into a windfall of \$1 million.



A handful of trivia sites, including GOLDPOCKET.COM, offer big kitties for their champions—and as Balmer can attest, yes, they are delivering.

Founded in June 1999, GoldPocket hosts the Live Trivia game show on Sundays at 8 P.M., Eastern time. Contestants vie for \$1 million each week. Much as in "that other well-known game show," contestants answer multiple-choice questions. The grand-prize winner gets \$40,000 a year for 25 years.

Before winning the jackpot and becoming the show's first seven-figure champion, Balmer was working part-time at home while caring for her parents in their rented Springfield, Missouri, mobile home. "The first thing I bought was a vacuum cleaner," says Balmer, "but my next purchase will be my own home." The self-described trivia buff said she found GoldPocket while searching for free alternatives to expensive computer games.

Leszek Pawlowicz, a computer consultant from Flagstaff, Arizona, has also joined this elite cadre of GoldPocket millionaire gamers. "I'm living proof that it's possible to win online," Pawlowicz says. "Getting on a [television] game show is quite difficult; this helps bypass the traditional procedure." He speaks from experience, having been a winning contestant on both Jeopardy! and Win Ben Stein's Money.

Now, don't quit your day job when you read this, but do know that at least five gaming and contest sites appeared in a recent Media Metrix Top 10 Entertainment Sites list.

GAMINGROUNDUP

BOLL 'FM

Little-known fact: You can make animated films with the free editing software bundled with such games as Quake II and Unreal, MACHINIMA. COM showcases nearly IOO dramas, comedies, and sci-fi and action titles. You won't find Toy Story 3 here, but smart use of the game scenarios and character voice-overs may well awaken the James Cameron in you-just leave Celine Dion out of the mix, okay?

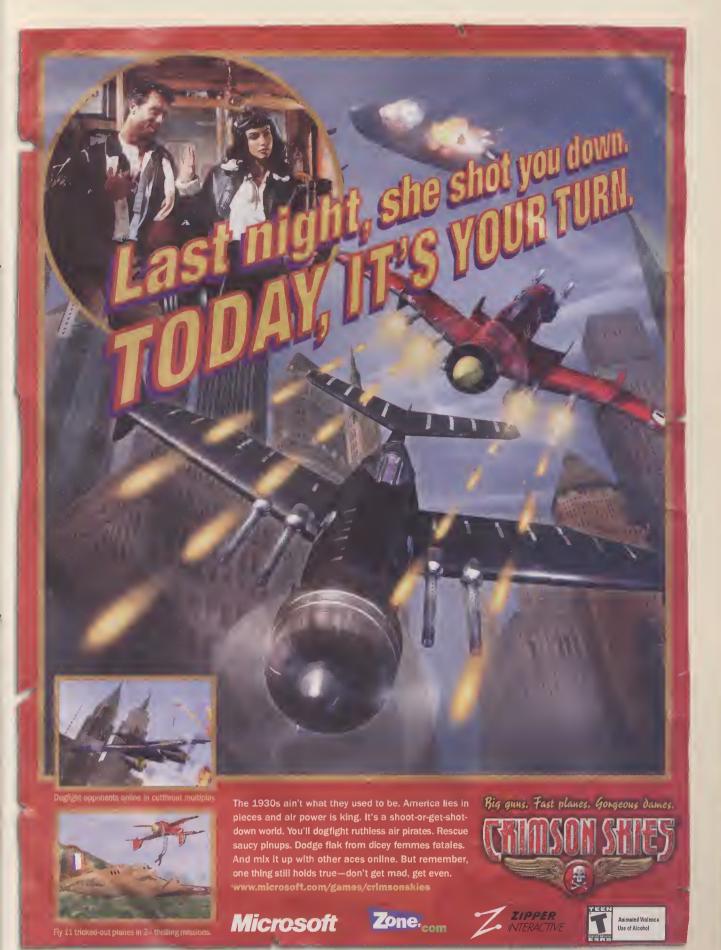
WHAT'S THE CATCH? FREELOADER.COM gives away fully functional games, many of them previously released on CD-ROM. Titles include the tactical action



thriller Hidden & Dangerous and the controversial Grand Theft Auto sim. It's all free, though the site will bombard you with a slew of banner ads and mandatory questionnaires in lieu of a bill.

PLAYING WITH YOURSELF?

Going solo again? With SOCKET [get-socket.com], a free download, not only can you play one of more than 150 games head-tohead online, you can also instantmessage other players, bookmark your buddies, swap files, and chat voice-to-voice or with text. -M.S.



NETSAVERS



TEXTS FOR LESS

Among the many travails of campus life, buying books is

right up there with doing laundry and dealing with a malodorous roommate. BARNES&NOBLE.COM [bn.com] aims to take at least some of the hassle-and expense-out of the process with its new college textbook department. It's promising savings of as much as 25 percent off list price, with all the expected conveniences of online shopping: searches by title, author, ISBN, or subject, along with book lists for 375 participating twoand four-year colleges and universities. But most notable is B&N's guaranteed-buyback program. It works like this: When you purchase a title, you're told its buyback price. One book we found for \$79 (ouch) carried a \$35 buyback; your total cost would be \$44, including shipping. Not only is this economical, but you'll know how much cash you'll have for that end-of-year blowout. -L G





NFAI FR RFWARF

Thanks to the wireless data services of PDA.EDMUNDS.

COM, car buyers with palmtons. handheld PCs, and Web-enabled cell phones now enjoy a real advantage when negotiating for a new car. Let's say your salesperson just won't let go of that suave black 2001 Volkswagen New Beetle GLX for less than \$23,000. You can excuse yourself to a guiet corner of the lot, pull out your device of choice, and access Edmunds's rundown on that model. Oh, look at that: The dealer invoice on that very model is only \$19,700, and Edmunds's assessment of the true market value (TMV) is \$20,465. Now, armed with the pricing data you need, the buying game is almost over. But are you ready to hold on tight and bargain? -L.G.

Losing It

The pounds are mounting, and it's not even New Year's Eve. Which online services will best aid your winter girth watch?



KAY, YOU'VE RESOLVED THAT THERE SAVEMONEY is no way you would ever go to a weight-loss class or submit yourself to a public weigh-in. But can a SAVETIME Web site encourage and nag you to eat better and less, while monitoring your quest to shed those saddlebags? Start answering that question with the Web-based diet centers listed in the chart below.

The drill, in most cases: You register, then fill out a questionnaire about your daily diet, eating habits, and attitudes toward food ---which yields a customized program based on your profile. Once you're on an actual diet, many sites offer live counselors, as well as chatrooms where you

can hook up with other hungry folks trying to talk themselves out of a midnight doughnut.

Of course, you'll need to bring your own willpower. But hey, it beats hiding under that extra-large T-shirt at the beach next summer, eh?

SITE	\$\$\$	CUSTOM DIET?	PHYSICAL/ PSYCH PROFILE?	TYPES OF COUNSEL
CYBERDIET cyberdiet.com	free	No; site supplies sample menus based on daily calorie range	Yes/No	Dietitian, chef, psychologist, personal trainer; no live counsel; live members chat for support and confession
DIETSMART dietsmart.com	\$15 plus \$10/month	Offers six plans	Yes/No	Nutritionist, fitness trainers; live counselors online ²
EDIETS.COM	\$10 plus \$10/month; other plans available	Yes; choices include frozen food and vegetarian options	Yes/Yes	Nutritionist, dietitian, psychologist, eating disorders specialist; e-mail and phone counsel ⁵
NUTRIO.COM	\$10 plus \$10/month; long-term plans available	Yes; the weekly menu plans can accommodate spe- cial dietary needs	Yes/Yes	e-mail and phone counsel* Sports therapist, psychologist, nutritionist/dietitian, physiologist, OB/GYN specialist; e-mail counsel or live support from peers or counselors

Boldly predicted a IO-pound weight loss for the author in a month's time. Except for those nights when you log on to find that everyone has gone home. help fight the boredom that could drive you to the fridge.

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Roman Holiday

O YOUR FRIENDS LOVED YOU FOR last year's rowdy bacchanal? This time around, trade in the togas and free-flowing "nectar" for some classic tableware. (But skip the vomitorium tradition. That's better left to the History Channel.)

Cast marble head of Thalia, \$295 [metmuseum.org/store]

Silvered-glass footed bowl (in foreground), \$29 [marthastewart.com] Linley ebonized sycamore architectural bowl (far right), \$255 [luxuryfinder.com]

These products available at WILLIAM ASHLEY [www.williamashley.com]: Rosenthal Palladiana soup tureen (center), \$325

From the Versace Collection by Rosenthal, at William Ashley (left to right):

Meandre water and sherry glasses, \$175 each Medusa pepper shaker, \$98 Prima Luce limited-edition

candleholder, \$1,750
Medusa service plate, \$225
Medusa silver-plated
dinner spoon, \$95

Meandre pitcher, \$295 Gorgona napkin ring (in bowl), \$125 Marqueterie dinner plates, \$75 each



Laptop gift shop.



Wayne's Web

Improv artist Wayne Brady answers the question, **Who's online**, anyway?

F YOU'VE NEVER SEEN WAYNE BRADY perform his regular gig on ABC's Whose Line Is It Anyway?, there's no need to wait until Thursdays at 8 P.M., Eastern time. The 28-year-old cutup is in residence at WAYNEBRADY.COM, where he can be found karate-chopping at least one old lady, among other doings.

Brady's cybercrib is not your everyday photo-and-bio yawner. Eager to interact with as many fans as he can, the self-described "actor who happens to do comedy" hosts a monthly improvisational chat. Log on, give Brady an idea for a skit, and he runs with it, using such Web gadgets as a voice-changer and the Little Wayne avatar, his fully animated alter ego.

Even when he's not live on the site, Brady might be sparring—virtually, that is—in Super Double Mortal Dragon Combat Fighter. This martial arts adventure pits Little Wayne against foes such as the aforementioned elder.

The mix of live and ongoing events works well for its host. "As long as I have my laptop with me, it's a really simple thing. I log on, we get involved in a chat, and we just go." But no matter how much Brady has enjoyed the online stage, it isn't yet a perfect venue: "[The Web's] fun, but I wouldn't want people to judge true improv by it," he says. "We don't have the same audience interaction there. But it's the next-best thing when you're trying to get to those fans that you ordinarily wouldn't reach." Besides, he adds, "I'm a big technogeek...and I mean that in the most affectionate way." -В.Е.

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*One-button image transfer for Microsoft[®] Windows[®] 98 preinstelled PC with USB port, Windows[®] 2000 PC, iMec[®], iBook[®], Power Macintosh[®] G3 with USB port or Power Mec[™] G4 end Mac OS varsion 8.1 or later. **3.3 Mege pixel when using Super Fina, Fine or TIFF modes.

*Eesy Mail™ attachment uses MAPI (Mail Application Programming Interface) for Windows®and Eudora for Mecintosh. Picturee simulated.

Point and shoot and the possibilities begin. Connect the ipalm™ digital camera to your PC and with one-button ease* your 3.3 Mega pixel pictures** are qulckly transferred to your computer. Edit your way to a masterpiece. Save your work on your computer or on an optional SD Memory Card. And when you're ready to share your genius with the world, you can output prints or send copies via the Easy Mail™ attachment system! With the ipalm™, digital photography is as easy as blng, bang, boom!

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THESITES

WEB TOPPERS

The most popular sites among Web surfers

UNIQUE VISITORS

-1	ҮАНОО.СОМ*	49.3
2	MSN.COM	41.6
3	AOL.COM	35.2
4	MICROSOFT.COM	30.1
5	LYCOS.COM*	27.6
6	PASSPORT.COM	24.1
7	HOTMAIL.COM	22.3
8	GO.COM	21.1
9	NETSCAPE.COM	IB.4
10	EXCITE*	15.7

WHERE'S THE BUZZ?

The most-visited entertainment sites.

UNIQUE VISITORS

I REAL COM

2	ABOUT.COM	12.2
3	PASSTHISON.COM	9.1
4	SPEEDYCLICK.COM	7.9

13.7

5 DISNEY ONLINE*

and the most-visited news/information sites

UNIQUE VISITORS SITE

М	ABOUT.COM	12.2
2	MSNBC.COM	10.0
3	WEATHER.COM	7.6
4	CNN.COM	7.3
5	CBS.COM*	5.3

Media Metrix [mediametrix.com], a Jupiter Media Metrix company, measures the preferences of 55,000 Net surfers. "Unique visitors" represents the number of users who visited the site

once during August. Apparent ties are the result of rounding. *Aggregated sites

NETPOLL

SABERS VS. HOLODECKS

Q: Which is the greater cultural contribution: Star Wars or Star Trek?

I FEEL THE FORCE. STAR WARS 48%

IS THIS THE CONVENTION? STAR TREK 52%

Poll represents responses of IO,447 voters at Excite.com as of IO/2.

SEARCHES

The most popular celebrity searches at E! Online [eonline.com]

L GEENA DAVIS



- 2 BRITNEY SPEARS
- 3 HOWARD STERN
- 4 JENNIFER ANISTON
- 5 JENNIFER LOPEZ
- 6 RUSSELL CROWE
- 7 'N SYNC
- 8 MAOONNA
- 9 MEG RYAN
- 10 ANNE HECHE

Rankings reflect September searches.

The best-attended get-togethers at Yahoo! Chat [chat.yahoo.com].

- 1 BONNIE FAKER WEIL relationship expert [9/28]
- 2 MICHAEL FREENY, relationship expert [9/14]
- 3 MICHAEL FREENY [9/21]
- 4 MICHAEL FREENY [9/7]
- 5 THE ROCK WWF wrestler [9/27]
- 6 98 DEGREES. boy band [9/18]
- 7 2GETHER, faux MTV boy band [9/27]
- 8 BETTY WHITE [9/14]
- 9 JACKIE CHAN [9/27]
- IO CINDY CRAWFORD & KENNETH COLE [9/14]

Rankings reflect September chat attendance.

WIRELESS

The top channels visited by AvantGo [avantgo.com] users.

- I FOX NEWS
- 2 THE WALL STREET JOURNAL
- 3 THE WEATHER CHANNEL
- 4 STOCK SMART STOCK TRACKER
- 5 FOX SPORTS
- 6 YAHOO
- 7 USATOOAY.COM
- 8 NEW YORK TIMES FRONT PAGE
- 9 CNET NEWS COM
- IO THE MOTLEY FOOL

Rankings reflect September downloads.

FILM

The top-selling titles at Amazon com*

- 1 GLADIATOR
- 2 THE PERFECT STORM
- 3 MISSION: IMPOSSIBLE 2
- 4 BRAVEHEART
- 5 THE PATRIOT
- 6 AMERICAN BEAUTY (THE AWARDS FOITION)
- TERMINATOR 2 JUICAMENT DAY-THE ULTIMATE OVO EDITION
- 8 TOYSTORY & TOYSTORY 2 (TWO-PACK)
- 9 THIS IS SPINAL TAP
- IO THE SOUND OF MUSIC

and the highest-priced titles per share on HSX.com: Hollywood Stock Exchange [hsx.com].**

- 1 STAR WARS EPISODE 2 \$155.29
- 2 THE LORD OF THE RINGS: THE FELLOWSHIP OF THE RING. \$117.72
- 3. HOW THE GRINCH STOLE **CHRISTMAS**. \$112.61
- 4 THE MATRIX 2 \$101 17
- 5 STAR WARS: EPISODE 3. \$99.99
- 6 CAST AWAY (AKA CASTAWAY), \$88.36
- **7 LITTLE NICKY \$88.23** 8 FINAL FANTASY:
- THE MOVIE. \$84.11
- 9 PEARL HARROR (AKA TENNESSEE), \$83.98
- 10 THE MUMMY RETURNS. \$83.32

*Rankings reflect September sales. **Rankings reflect quotes for the week

endina 9/22 MUSIC

The top-selling albums, as tallied by NMC [netmusiccountdown.com]*...

- 1 RIOING WITH THE KING, Eric Clapton & B.B. King
- 2 BRANO NEW OAY, Sting
- 3 COYOTE UGLY SOUNDTRACK. various artists
- 4 LA LUNA, Sarah Brightman
- 5 HUMAN CLAY, Creed

the most popular COs played on computers, as tallied by Gracenote [gracenote.com]...*

- 1 THE MARSHALL
- MATHERS LP, Eminem 2 MUSIC, Madonna
- 3 CALIFORNICATION, Red Hot Chili Peppers
- 4 COUNTRY GRAMMAR, Nelly
- 5 SUPERNATURAL, Santana

...and the top music videos at Vidnet [vidnet.com]...**

- I IT'S GONNA BE ME, 'N Sync
- 2 00PS!...I 010 IT AGAIN, **Britney Spears**

ART AUCTIONS

on Artnet.com.

The paintings prints, and photo-

L FALINE DÉVOIL ANT

print. \$48.300

2 SCÈNE BACCHIQUE AU

etching, \$28,750

3 THE VANISHING RACE.

NAVAJO Edward Sheriff

Curtis, print, \$21,275

lithograph, \$14,375

5 LE CHAPEAU À FLEURS.

Rankings reflect September sales.

4 MATERNITÉ, Marc Chagall,

Picasso linocut, \$10.925

MINOTAURE, Picasso

graphs generating the highest bids

UNE FEMME, Pablo Picasso

- 3 IOISAPPEAR. Metallica
- 4 PULL OVER Trina
- 5 WHO LET THE DOGS OUT Baha Men
- 6 BYE. BYE. BYE. 'N Sync

*Rankings reflect sales/play during the week ending 9/28.

**Rankings reflect September viewings.

ROOKS

The top-selling hardcover fiction titles at Amazon.com

- 1 THE REAR AND THE ORAGON
- Tom Clancy 2 OPEN HOUSE.
- Elizabeth Berg
- 3 THE BLIND ASSASSIN Margaret Atwood
- 4 THE SKY IS FALLING: THE NEW NOVEL.

Sidney Sheldon 5 SHATTEREO.







Unwrap the holidays with our lightweight 1.75-liter bottle. All the delicious, mellow taste in a great, easy-grip shape. At around two pounds lighter than a glass bottle, it's never been easier to lift your holiday spirits.

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When it comes to ease of use and creative control, the simple sophistication of this pair is hard to beat. The KODAK DC4800 combines point-and-shoot simplicity with feature-rich digital sophistication. Its 3.1-megapixel resolution delivers beautiful pictures, even on 11" x 14" prints. Choose from automatic or manual settings for the ultimate in creative control and flexibility. And its 3X (28-84 mm) optical zoom and 2X digital zoom lens let you go from wide-angle to telephoto in a snap. All in a compact design that makes it as easy to carry as it is to use.

WITHOUT THE CONFUSING "DIGITAL" PART.



Kodak

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CLICK! SHOPPING

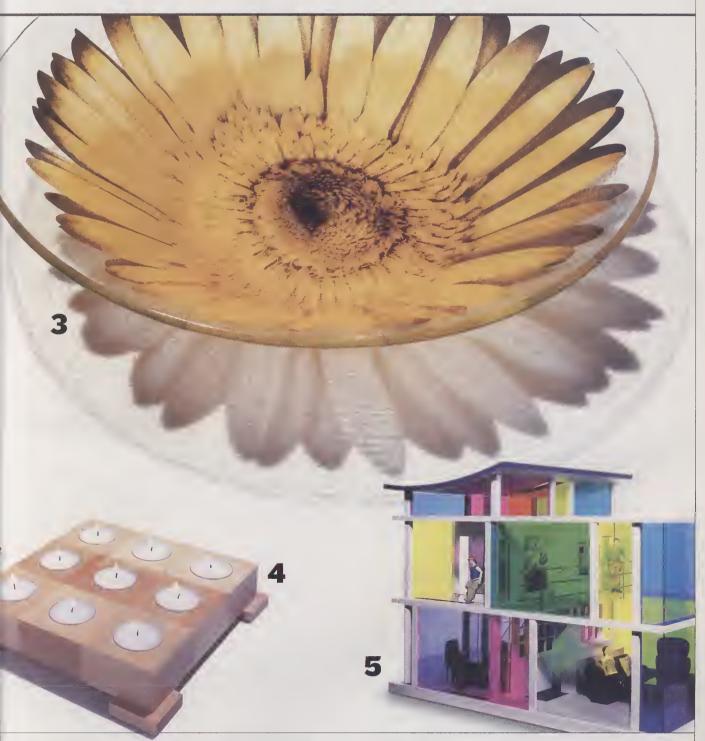


You Shouldn't Do It...

UT YOU WILL, YOU STARTED "THE LIST" BEFORE HALLOWEEN. BUT NO MATTER HOW HARD you try to avoid adding names to your gift-giving roster at the last minute, there will always be someone almost forgotten—the barber, the nanny, or even the offspring of your best client. Coming up dry on ideas? We present 10 ways to spread holiday cheer in the eleventh hour.

PASHMINAMANIA

Pashmina accessories have become as ubiquitous as a Gap pocket T-shirt. Try winning over that style-obsessed woman on your list with this beaded original, \$249, at SOHO SHOE SALON [sohoshoe.com]



2 WHOAAA...
You needn't swill the hard stuff to notice something "askew" with these curved glasses, \$45 for a set of six at the MOMA ONLINE STORE [momastore.org]. A perfect hostess gift for your favorite teetotalers.

3 THAT '70S LOOK

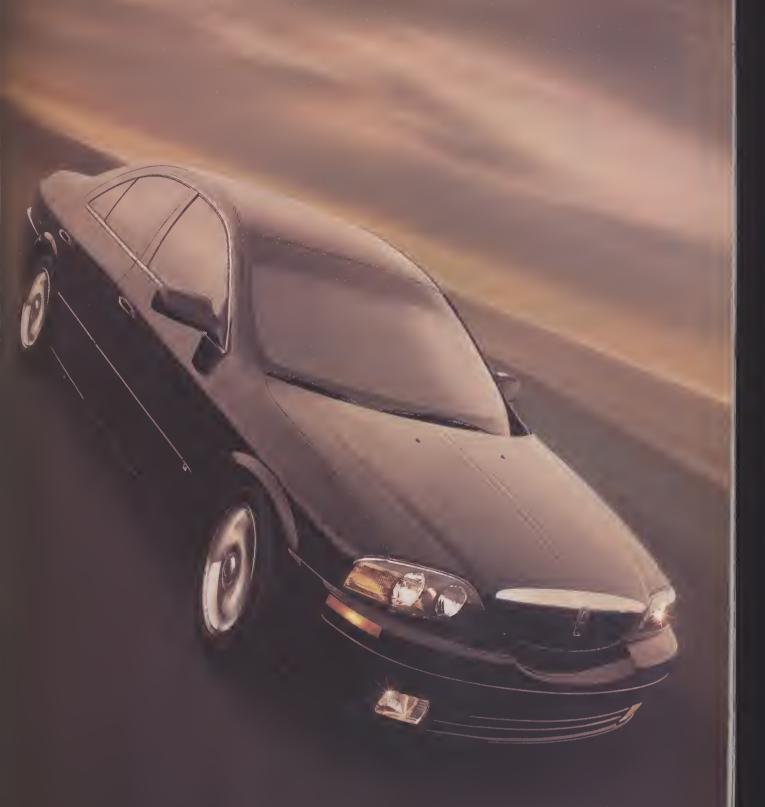
Give a buttoned-down acquaintance this Glass Daisy bowl, \$78 at ANNIEGLASS [annieglass. com]. Its silk screen—like image is certainly funkier than cherubs, vines, or horse-drawn wagons, without sacrificing panache.

4 TEATIME

One standout amid the ho-hum pillars and bayberry-scented horrors of the season: Michael Graves's wooden tea-light holder, \$20 from TARGET [target.com], our favorite superstore of late.

*Honey, I shrunk the Philip Johnson!" It's not hard to find several stylistic influences in the Kaleidoscope Dollhouse, \$190 at the MOMA ONLINE STORE [momastore.org].

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6 FITS LIKE A...

Thanks to wet-suit maker Body Glove, you needn't let a friend's brand-new StarTac run naked around town. Silver-trimmed black case, \$30 from AT&T [att.com/wireless/accessories].

7 EAU D'AMOUR

If a certain someone longs for Romance (Ralph Lauren's, that is), **POLO.COM** saves you a trip to the Mall of Hell; 3.4-oz. women's eau de parfum, \$60; the 3.4-oz. men's eau de toilette, \$55.

8 MAIL CALL

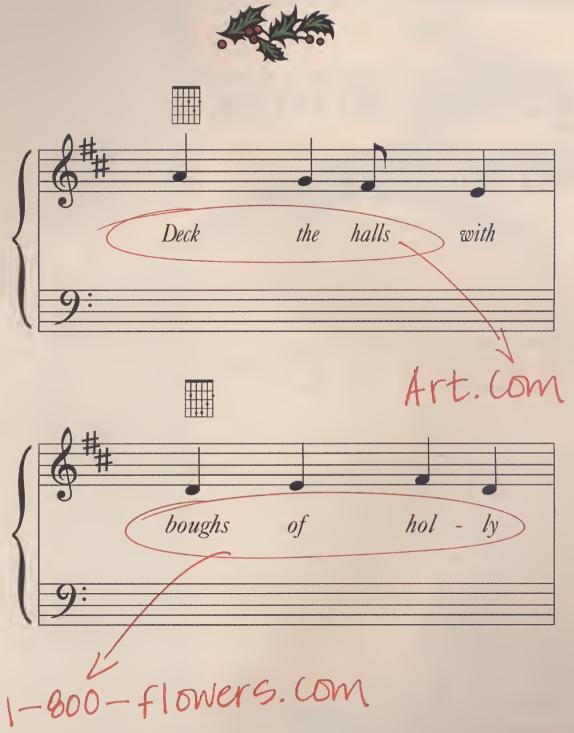
The Armor chain bracelet, \$160 from THE MET STORE [metmuseum.org/store], is a quiet tribute to days of old when maids were bought and sold. (But you'd best not share that with her.)

9 SAFE BET

These silver dominoes are guaranteed winners for the high-rolling risk-taker in your milieu, \$600 from **VIVRE** [vivre.com].

10 BLACK LIGHT

The Catherine
Memmi Moka candle,
\$55 at waterworks
[waterworks.com],
is an enlightening
gift for a friend
with a yen for Zen
in his decor.



Whether you need a simple centerpiece from 1-800-flowers.com or you want to spruce up your home for the holidays with some new artwork from Art.com, Visa* is an easy, convenient way to pay when shopping online. And with Visa's Zero Liability* policy, you can feel confident knowing you won't pay for any unauthorized purchases.



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A guide to surviving Internet hype

Here's how to filter out the noise of the surf

N THE INTERNET AGE, HARDLY A NEWSPAPER OR MAGAZINE GETS published that doesn't announce the end of everything as we know it. A former London *Times* editor and his coauthor, a venture capitalist, have published a book arguing that information technologies will soon eliminate the need for traditional governments and nation-states. A frantic New York City magazine editor tells an interviewer that digital technology will change entertainment—film, TV,

music, book publishing-"forever." Dotcom hype has supplanted sports as a media staple. Hype doesn't have to be positive to qualify—it just has to be overstated. In fact, hype about the death of everything dotcom is the flavor of the moment.

Companies rise and fall in nanoseconds, often just days after we've been told they're about to revolutionize the way we live. Will the Net really change

everything? Might we be overrun by new gadgets and new technology? How can hype-weary citizens figure out whether the Digital Age will overwhelm them, or whether it will simply provide them faster, more competitive ways of checking stock prices and nab-

bing car loans? Here's the Jon Katz-Y-Life guide to surviving media hype:

• First, discount half of everything you read or hear about technology, the Net, and your own life. Yes, the Net will have a real impact on music, movies, and books, but no, it won't change everything about them forever. The media ignored the Net for nearly a generation and are now trying to make up for lost time. For years, the press portrayed the Net as a haven for pornographers, predators, and hackers. Now the media present the Net as, in combination, an up-and-down gold rush and a sweeping social revolution.

■ Be wary. The history of technology is pretty consistent, even if media coverage of the subject isn't. Lots of

> but in a decade the world will look much as it does now. Computers will make even more information available (and they'll get smaller and cheaper and easier to use), and gobs of bandwidth will be available to ordinary folks for pennies. But we'll still live in houses and

things will change,

drive cars and go to the movies. The Net may change politics as well as music, but you'll still listen to CDs or their digital equivalent. You'll still have a TV in your living room, a remote to control it with, a supermarket down the road. Kids will still be playing soccer and baseball on grass, not only on video screens.

■ Think systems, not products. E-mail alone didn't make the Net significant. That took a combination of very practical applications and utilities-e-mail, bandwidth, information compression and storage, digital communities, online shopping. The much-hyped digital video TV recorder might be cool, even convenient. But it won't prove revolutionary unless it fits into a techno-ecosystem that works the way you and your friends and neighbors find valuable and necessary.

The press forgets a basic law of digital

technologies: Something that's coolisn't necessarily the same as something that's successful and profitable. Kids with broadband are having a blast sending instant

Discount half of everything you read or hear about technology. the Net, and vour own life

messages and creating way-cool sites. But most folks don't have all that bandwidth yet.

One advantage: Net hype will force you to develop and trust your own instincts. There's incessant chatter about the miracle of interactive TV, for example. But you love your TV a lot more than you love your computer. You know that your TV works pretty well. It's a lot easier to figure out and cheaper than your desktop, and it will be around for a long time, probably in its present form.

Remember that the middle class drives both media revolutions and social ones. The things you like, need, and use do well. Consumers are getting pretty hardheaded about buying things that require more batteries, tech support, and remotes.

Ultimately, the Net and the avalanche of gadgetry spawned by digital technologies will have to work for you. They will have to do things you want and need, not merely things that legions of ambitious techies think are neat.

E-MAIL JON KATZ AT jonkatz@slashdot.org.



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PERSONAL DIGITAL ENTERTAINMENT
Starts Here.

Should you say who you are online?

Starting a column on Net rights and wrongs

F YOU'RE READING THIS, YOU PROBABLY DON'T NEED CONVINCING THAT there exists a thing we can call Net ethics. That's because most of us get our sense of right and wrong first at home, then from figuring what we'd like to have people think we do. In the real world that's pretty much how you get the gist of these things: monkey see, monkey do, monkey do the right thing. From this you get, if we're lucky and you weren't raised by wolves, ethics.

You also don't have to be a paragon of ethics yourself to be able to talk about them, which is where I come in. I've been online nearly 15 years, and you may trust that a good portion of that was spent as a bad example. (But let's leave my MP3 collection out of this for now.) You do have to be willing to throw yourself headfirst into thinking about why we do the things we do

and how we can, as a venerable ethics-column predecessor of mine put it, "live right in an amoral world." Let's get to work. A friend writes:

Is it wrong to pretend to be someone else online? - Free to Be...He and She

We've all heard that bromide that goes something like, "On the Internet, no one knows you're a dog." Chances

are, though, that folks will know if you're a rat. A lot depends on why you're changing your identity.

For instance, back in the bad old days of my chatroom habit (I'm much better now, thanks), I'd seek out the AOL chat with the biggest, most obnoxious troll in existence and pretend to be exactly the kind of person who would yank that person's chain hardest. It was a way of expending the mindclearing adrenaline of a bar fight without the nuisance of an actual police record. Spend-

> here as a lesbian mom in a longterm partnership, 45 minutes there as a farmer arguing about crop subsidies, was something I did to annoy people who were annoying other people.Ithought of myself as a kind of Digital Avenger, shouting down jerks.

ing 30 minutes

What I didn't count on was the positive responses of the people I thought I was defending. They liked the person I was pretending to be and wanted to talk with that person outside of the conflict. But "that person" was a lie. In getting myself out of those situations. I had to admit to some people that I'd betrayed their trust. Some avenger.

That's what you'd call a sin of commission: I actively claimed to be something I'm not. On the other hand, sins of omission are a lot less problematic. Say you and I are discussing what we did in college, and you mention that you saw the movie Titanic when you were a frosh. From that statement I might assume you to be about 20 years old. But perhaps you're a nontraditional student and are actually 50. Unless the topic comes up, you don't "owe" me that data. I assumed, I was wrong, my bad. The only place sins of omission are significant is when participating in groups restricted to a characteris-

tic you don't have: women-only discussions, perhaps, or under-18 chats.

That's dogs for you; now a word about the rats. A lot of online communities are familiar with serial

'On the Net, no one knows you're a dog.' Chances are, though, that folks will know if you're a rat

trolls: people who enter a community, start kicking up trouble, get kicked out or shunned (in the grand and all-encompassing Amish sense), and reenter the community under a new name.

There are lots of reasons someone will attempt reentry, some good (a chance to redeem oneself) and some bad (a few last grenades to throw). I propose a deal with these people: If the rest of us agree that sometimes folks deserve a second chance, will you agree to be honest if someone asks you, "Hey, weren't you so-and-so before?" Lying is just an embarrassment in these situations. Take your chances and prove you're worth not zapping this time.

Surely you have livelier ethical dilemmas than my friends. Wondering if spying on your spouse's e-mail crosses a line somewhere? Worried that your MP3 collection is as evil as Metallica says it is? Thinking twice about having hacked the CIA Web site? Please send your ethics-related thoughts to me at angela_gunn@ziffdavis.com; I'll do my best to help you wend your way through the minefields.

-Yahoo! Internet Life, June '00



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China lays down the law

Plus: Count Chocula on the hustings, the patois of pizza preparers, and how to say what you really need to say in French and Spanish

Net Crackdown

Spurred by the Net's growing popularity in Asia, the Chinese government recently issued strict new rules limiting the free flow of information online. A version in English appeared on **SOHU.COM**.

INTERNET CONTENT PROVIDERS that conduct news, publishing, or electronic bulletin-board services must record the information they provide and the times they publish it....They must record the times users log onto the Internet; users' account numbers, Internet addresses, or domain names; and the phone numbers users dial in from....The records should be provided to police investigators upon request, and Web sites should censor and report all illegal content that is posted.

[english.sohu.com]

Cereal Voters

Feel like you wasted your vote this year? At COUPLAND.COM, patriots were urged to consider this slate of sweet-toothed presidential alternatives. And hey—who says donkeys and elephants should be the only party animals?

TONY THE TIGER

Tony is the Charlton Heston of the cereal spokesworld. Robustly heterosexual, he's a good old boy who's equally at ease on the golf links, lunching with Bill Gates, or manning the air-dryer device which gives mashed corn droplets their famous flaked shape. Tony's always the first guy into the Bohemian Grove sweat lodge, and one nod from the Tonester, and your kid's in Yale, no questions asked.

TOUCAN SAM

As spokestoon for Froot Loops, Toucan Sam has campaigned hard for gay, lesbian, and



But 1944, man: Jon Haddock's art depicts famous events in "isometrie" perspective, as if they were seenes from video éames. Here, he recreates the self-immolation of a Buddhist monk protestiné the Vietnam War. [whitelead.com/jrh/screenshots]

bi/curious rights. His image took a drubbing in 1996 after he pooped on the AIDS quilt during an overexcited moment meeting Elizabeth Taylor for the first time. His recovery has been strong, though, especially after the wide outpouring of sympathy after he revealed on Barbara Walters that he'd spent much of January 1999 in a Special "K" hole and was currently seeking counseling.

COUNT CHOCULA

As a candidate, "The Count" has it all: good looks, charisma, intelligence, and breeding. Says his campaign manager, Elizabeth Klein,

"The Choculas are like the Kennedys of Transylvania." Unfortunately, as the Count wasn't born on U.S. soil, he's ineligible for presidential candidacy....

BOOBERRY

"Boo," as he's known to his supporters, is the ghost of an American citizen and thus has the theoretical, if unprecedented, right to run for elected office. The fact that his cereal has been discontinued only lends street cred to his deadness. Boo's campaign, however, seems stalled after his ill-advised Dayton, Ohio, speech on the need to enforce





MailStation." One-touch e-mail without the PC.

Sometimes you just want to sit back, relax, and e-mail a friend. That's when you turn to your MailStation. It's e-mail without the hassles of a PC or the Internet. Simply plug it into a phone jack, press a button, and get your e-mail instantly. You can also check out Yahoo! news and other info at the touch of a button. Then unplug and take your MailStation anywhere you want to read or write. Convenient for when you want to hang out with your real best friend. Pick one up at your local retailer. Or contact us at www.mailstation.com.

Plus \$9.95 for monthly service.



national standards on making all coffins escape-proof. It's hard to figure out if Boo is a liberal or conservative, but in general, voters find his abilities to pass through walls slightly creepy. [coupland.com/ writtenword/nonsense/spokestoons.html]

Nailing Nail Offenders

A quiz at TEENS.COM offers young women a chance to brush up on their nail knowledge. After taking the guiz, those who fail (or don't enter any answers) are treated to the following analysis.

YOU COULD BE NAIL NEUROTIC: Orange sticks and O.P.I., pedicures and paraffin waxes are familiar words to your vocabulary. You may have manicure madness or regularly see a professional every few weeks to care for your cuticles. You are in touch with the latest nail polish colors....Whether it may be a quick chip, a snarly snag, a challenging crack, or the polish does not match your outfit, you know how to handle your hands. You flip through all the magazines looking for the new techniques in nail design....All the girls admire your lovely nails and turn to you for your advice. [boards.teen.com/quizzes/questions. html?auiz_id=231

Slice of Slang

For the benefit of pizza lovers nationwide, Maledicta, the International Journal of Verbal Aggression, gathered a list of code words popular among the pie-making crowd.

Alpo: Taken from the dog-food brand and used to describe sausage topping. Other words for sausage include Kibbles n' Bits, Puppy Chow, dog food, and Snausages.

Edgar Allan: A slang expression for a pizza with pepperoni (P) and onions (O), making it a PO pie, as in Edgar Allan Poe.

Fivers and fungus: Expression for a penperoni and mushroom pizza. Pepperoni slices are called "flyers" because they can be thrown like Frisbees.

Green slime: Term for green peppers, coined because they are sometimes inadequately stored. Peppers are also called..."seaweed."

Placer: A customer who places a hair on a pizza and then complains about it in hopes of getting a discount or a free pizza.

Republican pizza: A pizza with GOP (green peppers, onions, pepperoni).

Vulture pie: A badly made pizza, suitable only for vultures or for eating by employees.

[augustachronicle.com/headlines/I0I696/pizza.html#I]

The End.com

In the following excerpt from the article "What to Do When Your Life Falls Apart," Gail Bentley, CEO of WW: WORKING WEEKLY, writes about the pain of dot-com failure.

ONE OF THE HARDEST PARTS ABOUT now is that the then, the before we lost all the money, before when we had 60 people working toward building the dream, before the company was closing and I was sitting in a 6,000-square-foot office by myself surrounded by empty desks...well, the before was really, really good. I said it while I was in the middle, not just looking back now: I was happier than I've ever been in my life. I was living the life I was born to live, and I knew it. I was challenged every day, and while I was exhausted and stressed and overworked, I was incredibly, amazingly happy. And now it's over.

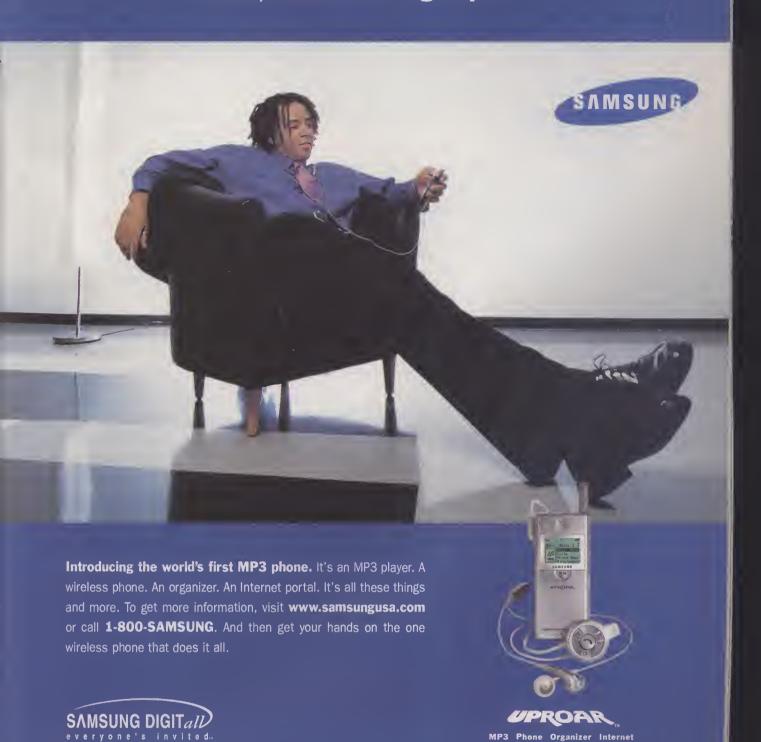
Let me get all of the awfulness out of the way: There's the biggie, overriding awfulness, of course—the one of basic failure, the kind of failure when you put everything you had into something, when you absolutely believed it would work, when you did the absolute best you could at every minute, and worked as hard as humanly possible and then it didn't work out. Then there's the awfulness that not only was this my dream, but Working Weekly was the dream job for over twothirds, if not more, of our 60 staff. All of whom, plus investors and partners and general supporters, believed in me and trusted me and were so happy, and then they got the rug pulled out from under them too. Add to this awfulness the fact that...there are a bunch of people who just



Bon an At the Minneapolis Sign Project, Jason Kottke presents a series of photographs he took around the city. This sign is from a bar near his office. The green lump remains unidentified. [web.Osil8.com/episodes/mpls_signs/lunch.html]

A FOUR-IN-ONE PHONE THAT DOES EVERYTHING.

Cool, where do I sign up?







SOUTHERN SQUEEZE

Pour 1½ oz. Southern Comfort over ice. Fill the glass with orange juice. Add an orange slice.



SOUTHERN Cola

Pour 1½ oz. Southern Comfort over ice in a tall glass. Fill with cola. Add a squeeze of lime, Stir.



SOUTHERA HURRICANE

Pour 1½ oz Southern Comfort over ice. Add ½ oz of Grenadine. Fill with lemon-lime soda. Add an orange wedge and cherry.



CUT & PASTE

seem to hate me. And while they don't often sign their names, they certainly aren't shy in telling me how much they can't stand me. [workingweekly.com/internalpageframeset.asp?pagename=viewcommon.asp&pageid=15&editorial=206&category=1]

Soap-E-Opera

Having an easily mangled e-mail address is a problem no matter who you are. But as illustrated by the following excerpt from the Webzine SUCK, being confused with a soap opera star can be particularly torturous.

IASON COOK IS A HUMBLE WEBmaster in California. Last week he was deluged with e-mail signed "Your Number 1 Fan" with subject lines like "I LOVE YOU!!!!!!!!!!!!!!!!!!" It seems there's another Jason Cook, the dreamy actor who plays Shawn-Douglas Brady on Days of Our Lives. And according to (webmaster) Cook, Soap Opera Digest confused their e-mail addresses in a recent article. It provided an educational experience, (webmaster) Cook reported on his site, adding, "I've learned that daytime television fans are also fans of the exclamation mark." In an e-mail he said. "I've tried filtering out any message with more than five exclamation marks in a row, or 'SO FINE' in all caps, but that's only catching about 50 percent of the junk. I'm getting mail every three minutes." It's hard to see where the error originated; (webmaster) Cook has held the domain JASONCOOK.COM since 1997. He delicately offered his assessment in the June 28 entry for his site's Web log: "I'd never dare besmirch the reputation of such a highbrow literary publication, but I'm thinking the fact-checking department at Soap Opera Digest might've been watching TV on the job. Again." [suck.com/daily/2000/07/06]

dot-cummings

The following satirical poem, which appeared on SATIREWIRE, celebrates the poetic side of business through the eyes of the virtual poet e.e. commerce.

all in navigator gold went my browser exploring at a great high-speed of bandwidthishness into the silver Web.

four lean colleagues crouched low
and smiling
o'er my shoulder watched:the merry
dancingbaby fleetly
we clickedthru; pursuing perchance
to purchase
the swift sweet cd
the cheap coach class seat
amazonpriceline. we live in this
great beyond
.com
i am locked in; (like a kiss everlasting
a love ever-evolving

an impressive monthly mortgage from e-loan)
to this internet eternal. I.
and you?
[satirewire.com/features/
satire-eecommerce.html]

Translations for Netty Travelers

Mark Rosenfelder's **ZOMPIST PHRASEBOOK** features an array of linguistic marvels, including the following translations for phrases designed to handle some of the sticky situations that tend to arise when English-speaking travelers venture abroad.

I know I'm naked, could you just tell me how to get back to the hotel?

Je le sais bien que je suis à poil; je veux simplement savoir comment rentrer à l'hôtel. Ya se que estoy calato; sólo quiero saber cómo volver al hotel.

You're wasting bandwidth.

Quelle gaspillage des resources du Rézo.
iQué manera de despilfarrar los
recursos de la Red!

Are all of your jails this filthy?

Vos prisons sont toutes aussi dégueulasses? ¿Todas sus cárceles son así de

cTodas sus carceles sor inmundas?

Don't "imperialist pig" me, my good man.

Fichez-moi la paix avec votre "cochon impérialiste," mon petit bonhomme. ¡Vávase usted al cuerno con su "cerdo impe-

rialista," hombre!
[zompist.com/phrases.html]

Y

BUZZEO? READ MORE CHOICE

CLIPS DNLINE

WITH DAILY
NET BUZZ AT

Celebrate responsibly.

uthern Comfort Company, Liqueur, 21-50% Alc. By Volume, Louisville, KY ©2000



Pour 1½ oz. of Southern Comfort along with 2 oz. each of cranberry juice & ginger ale over ice and enjoy the spirit of the holidays.

Celebrate responsibly.

www.southerncomfort.com www.woodlandplantation.com

Southern Comfort Company, Liqueur, 21-50% Alc. By Volume, Louisville, KY ©2000



Handheld PCs



Digital Cameras



Digitai Music Players



Smart Phones



Camcorders



PDAs

Greg's stock portfolio,
(ape (od vacation shots,
and classical music collection

How will you use it?

SanDisk offers you the flexibility to use your memory card in handheld PCs, digital cameras, digital music players, laptops, smart phones, digital video recorders and more. Our high-performance MultiMediaCard,

CompactFlash™ and SmartMedia™ memory



cards offer compatibility with most portable digital devices. And with SanDisk's FlashPath™ adapter and ImageMate™ reader you can quickly and easily transfer data from your memory card to your computer. With the best-selling memory solutions from SanDisk, there are so many possibilities. Visit your local reseller or see us at www.sandisk.com/yahoo/.



Sandisk Wind More Memory. More Possiblities.

COOL TOOLS

ULTIMATE ACCESSORIES FOR THE DIGITAL LIFE BY GORDON BASS





4 ON THE RIGHT FOOT

Serious runners often avoid the path less traveled because of difficulty logging their mileage down unfamiliar routes. The Nike SDMITriax 100 (sdm stands for speed distance monitor) includes both a sport watch and a small pedometer that attaches to the instep of your shoe. The shoe unit records your speed and distance at an accuracy of greater than 98 percent and wirelessly sends the data to the watch on your wrist. Even if you don't know where you are, you'll know just how far you've gone, and how fast.

SDM[TRIAX 100 \$200, Nike [nike.com]

5 DISC O' PLENTY

Problem: While you can save 150 or more MP3 files on a CD, a standard player can't play them back. Solution: The new Pine D'Music SM-200C CD/MP3 player takes standard audio CDs, as well CD-Rs onto which you've burned a dozen Quiet Riot albums (including your rare European bootlegs) and other favorites from your collection. It displays not only the current track number but also the album and song titles. The device has 10 seconds of memory for shock protection and five equalization modes that re-create different listening environments.

D'MUSIC \$200, Pine Technologies [pineusa.com]

6 YOUR PAD OR MINE?

Ever scribble down a brainstorm, only to be overcome by a fit of paranoia that causes you to tear the paper to shreds and swallow the pieces? No? Well, you'll certainly find other uses for the Seiko SmartPad, a portfolio with room for a standard pad on one side and your Palm device on the other. Write on the pad with a special SmartPen, and the notes are automatically copied to the Palm, where they can be saved as images that can be uploaded to your PC. And you can password-protect the information on your Palm and destroy your paper trail.

SMARTPAD \$200, Seiko Instruments USA [seikosmart.com]

power this outrageous

now available in a battery

the battery with a heart of titanium

take power to the next level™

ORDINARY PEOPLE DOING EXTRAORDINARY THINGS ONLINE BY JEREMY CAPLAN



Spreading good cybercheer

Random acts of kindness—now on the Net define Chuck Wall's caring and career

OR CHUCK WALL, KINDNESS IS NOT JUST AN OBSESSION—IT'S A PROfession. As the president of **KINDNESS INC**. [www.kindnessinc.org] and a professor of management and human relations at Bakersfield College in California, Wall promotes the idea every day. In 1993, Wall asked each student in one of his classes to commit what he called a "random act of senseless kindness." One student bathed and fed a stray collie, then posted a sign that helped the dog's owner reclaim the pet. Another student distributed blankets for local homeless people.

Wall's assignment and its results caught the eye of a reporter, and Wall became a celebrity overnight, eventually making more than 300 television and radio appearances. In 1995, Congress proclaimed a National Random Acts of Kindness Week. But as Wall's idea lost its novelty, media attention faded. Now out of the spotlight, Wall has taken to the Internet to advance the cause of kindness.

The transition has not been easy. Wall is blind, unable to surf the Web without the help of his wife and JAWS software, which reads the text of a Web page aloud. "Turn off your monitor and try to navigate around a Web page and you'll have a sense of what it's like for someone who is blind trying to use the Internet," he says.

Wall speaks of the Internet not as a frustrated user, but as a disappointed visionary. This December marks the 30th anniversary of the White House Conference on Children, for which Wall scripted a presentation about life in the 21st century. Wall, who holds a Ph.D. in educational administration and management, impressed President Richard Nixon and other conference attendees by describing a vision of networking much like today's Internet.

But today's Net in some ways falls short of Wall's early ideals. He had expected screens to be operated by touch and voice, for example. By contrast, he considers the keyboard and mouse to be nonintuitive input devices. "I'm looking forward to the day when the Internet is verbal," he says.

Despite the Net's limitations, Wall hopes that his site, designed by volunteer David Plivelich, will one day anchor an international network of sites about kindness. Already thousands of sites in multiple Web rings are devoted to the subject (see YAHOO! WEBRING [webring. org]), and many cite Wall as their inspiration. One site, THE GENEROSITY GAME [generosity.org], encourages visitors to do a good turn anonymously for a stranger. Another site, KINDNESS SEARCH-ENGINE [www3.bc.sympatico.ca/kindness], records stories of favors and suggests ways to help out a neighbor or friend.

For Wall, random acts of kindness are

Can your palm do that?





Not unless it's holding a

Pocket PC.

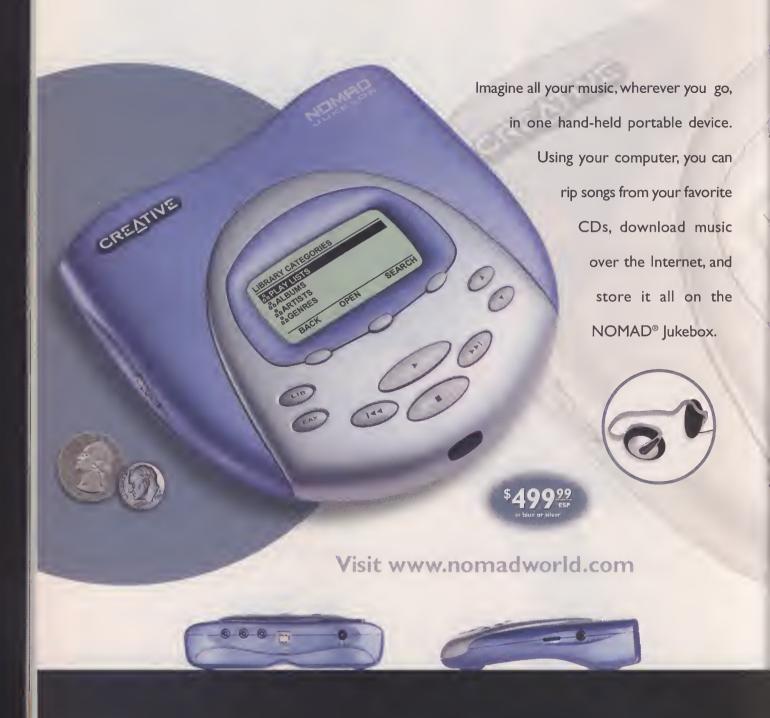
Sure other products allow you to read email, but what about the attachments you receive? The HP Jornada Pocket PC includes pocket versions of Microsoft® Outlook®, Word and Excel, so not only can you open and read those attachments, now you can even edit them. Need wireless access outside the office? Use a Socket Mobile Email PocketPak (pictured above. sold separately) and connect your Pocket PC to a data-capable mobile phone* and dial-in to read more than just your email. The easy, expandable and versatile Pocket PC-it's more than just an organizer!

Learn more at PocketPC.com



*Depends on your carrier's service level and coverage area. Connect time charges may apply.

This is Not Your Daddy's



Jukebox

save your change for the parking meter

NOMAD Jukebox holds 150 CDs of digital MP3 music. Built-in EAX™ audio technology and FourPointSurround speaker support give you the ability to customize your music for the most immersive desktop or home audio environment imaginable. Let's face it, all this coupled with intuitive navigation, 6GB of storage, and a line-in jack for recording, makes NOMAD Jukebox the only audio equipment you'll ever need to own.



EAX AND SYSTEM MENU
PARAMETRIC EQ
SPATIALIZATION
ENVIRONMENTAL SETTINGS
PLAYBACK SPEED
RECORDING

ENVIRONMENTS:

EFFECT: ARENA
AMOUNT: 50%
SAVE CHANGES: ON/OFF

SET PLUS MINUS







PERSONAL DIGITAL ENTERTAINMENT

Starts Here.

SMALL TOUCHES

distinct from ordinary responsibilities. "The idea isn't to do things you're already supposed to do, like helping around the house or washing the dishes," he says. "It's about spontaneous kindness—stopping to help someone cross the street, or saying thank you to a custodian who has never heardthose words from you." Wall says the Internet affords great opportunities for people to console those who need it, and to thank those who deserve it. "It's much easier to type up a quick thank-you e-mail than to write out a note, address it, stamp it, and walk it over to the mailbox," he says.

Since he doesn't read or type Braille, Wall has composed his recent books on

'It's about spontaneous kindness...saying thank you to a custodian who has never heard those words from you'

kindness by dictating them. He hopes eventually to publish his writings online, where sighted and blind users will be able to read or listen to the text. His new book, *Selling Lemonade for Free*, is available at the site, as are kindness T-shirts, bumper stickers, and videos. All proceeds from the site's sales go toward Kindness Inc.'s nonprofit goodwill endeavors.

Although sales on the site have been slow, Kindness Inc. has used the proceeds to fund a free kindness curriculum and workbook for elementary school teachers, and to send underprivileged students to summer camp.

Since the famous "random act of kindness" assignment that brought him into

RANOOM ACTS

OF KINONESS CHAT

EASTERN, AT CHAT.

ON NOV. 30, 4 P.M.

the national spotlight, Wall has had a subtle change of heart. Instead of requiring students to complete the famous kindness homework project.

Wall invites his classes to do it for extra credit. "You shouldn't have to force someone to do something nice," he says. "Kindness should happen because you can't bear to be without it."



EDUCATING SENIORS

[www.seniornet.org]

et culture seems youthful, but seniors are the fastest-growing online population. For many of those who grew up when television was brand-new and telephones had rotary dials, the Internet can be daunting, "The Net isn't particularly seniorfriendly," says SENIORNET president Ann Wrixon, "It's hard for many elderly Netizens to see the small print, maneuver with a mouse, and sort through Web pages' clutter." To help those over age 50, nonprofit Senior-Net funds some 190 learning centers across 40 states, training more than 60,000 people a vear at the centers-and many more through free tutorials at its Web site-in basic computer and Internet use. "In our courses," says Wrixon, "instructors spend two weeks explaining exactly how a mouse works and how to adjust the font size on the screen."

PAYING LAST RESPECTS

[lastalarm.org]

hen a firefighter dies in the line of duty, colleagues hold dear the memory of their lost partner. At a site called THE LAST ALARM, firefighters pay tribute to those

who nobly served their communities with dedication and bravery. The site includes online memorials, tributes posted by visitors, and links to further information about firefighters. About James Renfroe. a Dallas firefighter honored on the site, a colleague wrote: "James taught me everything I know about the fire service.... James will keen living in the hearts of the Dallas County Fire & Rescue family he loved so much. Every fire we go to...he will be right there with us, fighting and treating and commanding."

CARDING CELEBS

[www.pedaids.org]

indy Crawford, George
Lucas, and Sugar Ray
Leonard join some 200
famous Americans in
designing holiday cards
to benefit the ELIZABETH
GLASER PEDIATRIC AIDS
FOUNDATION. Proceeds from
the sale of boxed sets of



the cards, which are available online, will go directly to the foundation, whose mission is to support research on the treatment and prevention of HIV infection in infants and children. The cards are also available as free greeting cards at YAHOO! GREETINGS [greetings.yahoo.com], and each online card sent will include an AIDS prevention message and a link to the foundation's Web site.

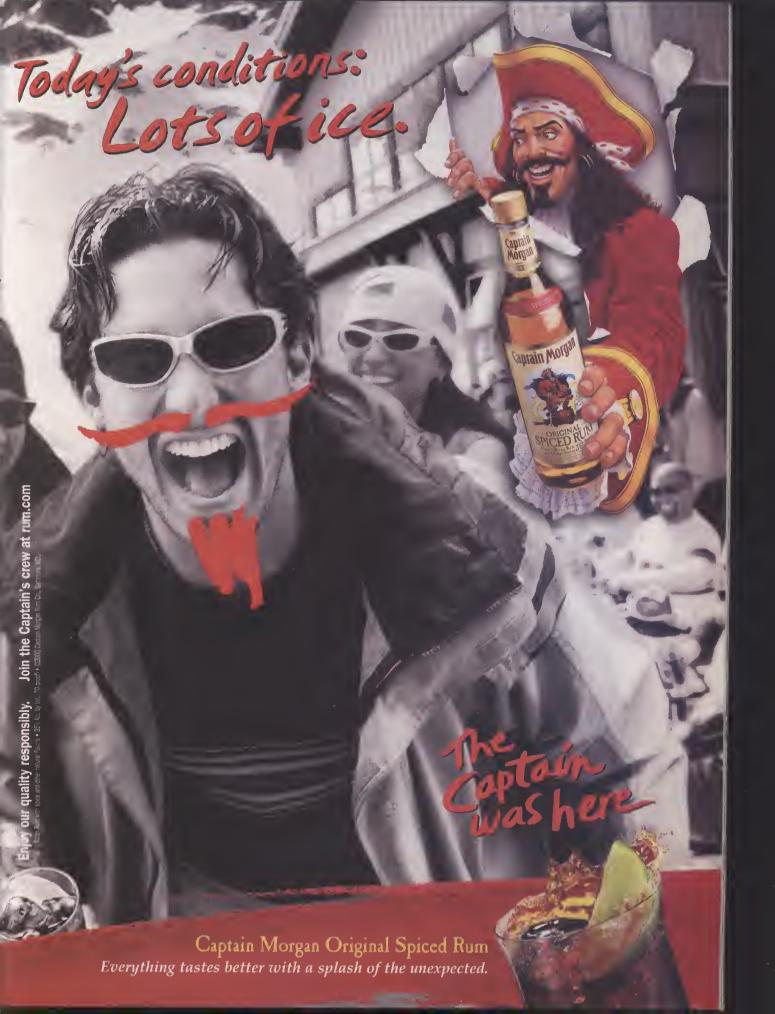
RECRUITING TEACHERS

[teachforamerica.org]

any complain about the poor quality of public schools, but the outstanding college graduates who become Teach for America corps members actually work to improve education. For the past decade, more than 6,000 corps mem-

bers have taken

two-year teaching positions in underserved urban and rural public schools across the country. As part of its 10th anniversary, TFA is revitalizing its Web site, TEACH FOR AMERICA, where recent college graduates can apply, and current teachers and alumni can stay in touch, sharing advice and resources.



COMPARING THE TRIED-AND-TRUE WITH THE NET-AND-NEW BY DAVID SHEFF

Making fruitcake

OLD WAY

An aunt who used to send us a brick-hard fruitcake each year decided to spend the holidays in Jamaica, so we were on our own. I checked our cookbooks and found a recipe that sounded good.

• Tackled it, omitting the clovingly sweet d green cherries, since I always pick them out anyway. Baked a cake and tasted it.

TIME ELAPSED:

15 minutes choosing a recipe and four hours making and baking

NFT WAY

Predictably, a search on *fruitcake recipes* L turned up a list of thousands. Tried a nice and gooey "black batch" recipe at ART IN THE URBAN LANDSCAPE: FRUITCAKE RECIPES [tesla.csuhayward.edu/cappstreet/urban/ outlaw/recipes.html]

 My personal favorite is a spectacular SOUTHERN FRUITCAKE [mbgoodman. tripod.com/sandrasrecipe.html] by Sandra Stanfill at the Society for the Protection and Preservation of Fruitcakes. Maybe it's the nectar-spooning stage at the end....

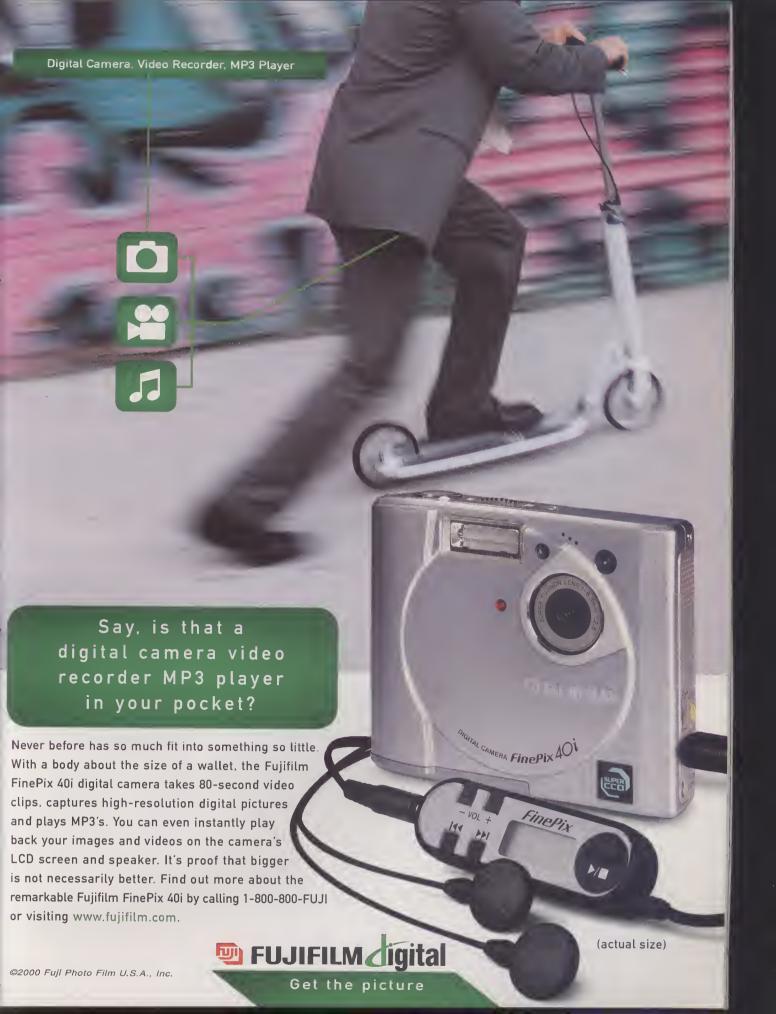
TIME ELAPSED:

An hour or so on the Web reading about fruitcake, believe it or not, and four or so hours of baking per recipe

COMMENTS: A lesson I learned: Do not go



For variety and what turned out to be the best fruitcake of all, the Net couldn't be beat.



Spinning a dreidel



NI N WAY

My children were playing dreidel, the Hanukkah game, but we couldn't remember what happens when a *gimel* or a *shin* gets spun. Called the expert: my father.

• He explained that a *gimel* is the best spin— 4 the player collects all the money (or Hershey's Kisses, in my kids' game)-and with the spin of a *shin* the player puts a coin (or Kiss) in the pot.

TIME ELAPSED:

5 minutes calling, plus a 17-minute explanation of the dreidel's history

COMMENTS: A local synagogue or Jewish organization would know the answer. Also, all libraries have books about Hanukkah.

Searched on *dreidel* and came up with a long list of sites. The first one, **TEMPLE BETH** TORAH: HANNUKAH [www.ridgenet.net/~robin/ Temple Beth Torah/hannukah.html. also had some variations on the game.

Tound two online dreidel games—JCN'S 4 GREAT COMPUTERIZED DREIDEL GAME [icn]8.com/spin-ns.html and THE DREIDEL GAME [www.billvbear4kids.com/holidays/ hanukkah/dreidel2.htm], which are cool as a novelty but hardly the same thing.

TIME ELAPSED:

6 minutes

COMMENTS: The holidays are well covered on the Net

► WINNER: IIII WAY Although the Net was a good source, my father would have been upset if he hadn't "won."

Renting 2001: A Space Odyssey

NI N WAY

For New Year's Eve, it seemed obvious but perfect: drinking Champagne and viewing Arthur C. Clarke and Stanley Kubrick's timely masterpiece. So I called around.

 Soon discovered I wasn't the only one with that idea. My local video store's two copies were already reserved for the big night.

Tried the local Blockbuster, which had a **J** copy of the DVD for rent for \$4. But this chain-store branch doesn't take reservations.

TIME ELAPSED:

7 minutes phoning

COMMENTS: Started to wonder if I should just go out and buy a copy.

Searched on *DVD rentals* and came up with L CAFEDVD.COM and NETFLIX.COM. At CafeDVD. the price is \$3 for seven days. Shipping is \$1.50 (or free if you order at least three movies). I could order a week before New Year's Eve and have the movie in time. But it might be out of stock by then.

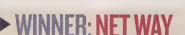
At NetFlix, membership costs \$20 a It's pricey, but you can have as many as four DVDs sent to you at a time. And you can keep them as long as you want.

3 Signed up with NetFlix and ordered the movie, which arrived soon after.

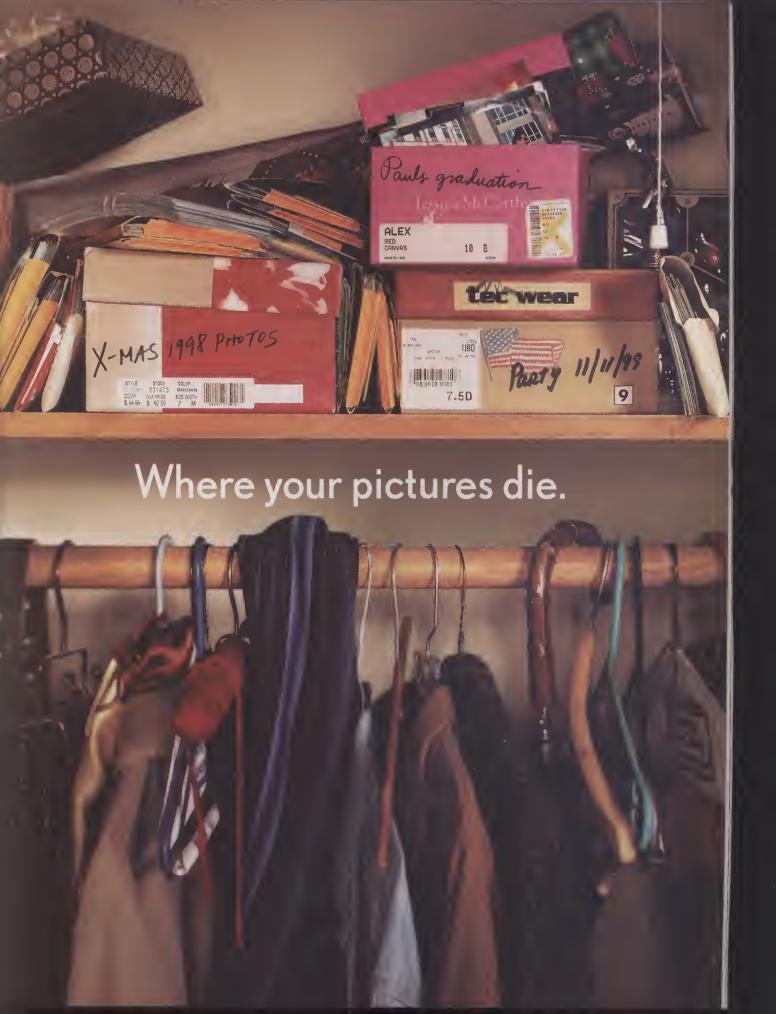
TIME ELAPSED:

About 15 minutes, surfing and registering

COMMENTS: Felt a bit guilty for hoarding the film.



It's a sure thing—if I order early enough (which I did).



Where your



Welcome to Shutterfly.

Got a camera? Got a camputer? Then this is the Web site for you.

Where do you keep your pictures? Stuffed in a shoebox on the top shelf of your hall

Shutterfly can help you improve and enhance your pictures.

Like providing a collection of borders and effects that let you personalize them in a variety of ways.

closet, right? So much for posterity.

But when you send your digital pictures or film to Shutterfly, some pretty amazing things start to happen.

First, you get

to order great looking, high-quality prints right from your personal

Frame your best shot.

Coming this holiday season: handsome picture frames that can turn a great picture inta a great gift.

computer. You also discover new ways to send prints to friends and family—minus all

And then there are all the ways

the hassles.



Go ahead, get creative.

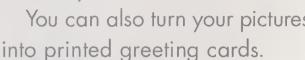
Shutterfly gives you lots of ways to have more fun with your pictures. Give them a soft focus, add a special border, ar try an antique laok. Na extra charge.

Shutterfly.

Or the point-andclick tools that help you crop your photos and remove red-eye, just like a pro.

But prints are just part of what you can do at

You can also turn your pictures





It's never been easier to share pictures. You choose the pictures and we'll handle it from there.



pictures live.



Get high-quality prints.

Shutterfly is all about getting high-quality prints from your digital ar film camera. Just haw gaod are they? Sign up today and we'll give you 25 free prints to find out for yourself.

Simply choose an image, type in a personal message, and let Shutterfly print and mail the cards out for you.

Even if your mailing list runs into the hundreds.

Sound complicated? Don't worry, it's not.

Everything about Shutterfly is easy, from getting great prints to being creative with your pictures.

Maybe you're thinking

this all sounds too good to be true. Well, we'd like

a shot at proving it to you.

Actually, 25 shots. Sign up today and we'll

credit you with 25 free 4x6 prints.

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BY RICHARD BUTNER

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thumbs; we, on the other hand, have the uncanny ability to kill the hardiest of plants. If you're like us, bone up at **NEO-FLORA** [neoflora.com], the site that bills itself as the world's largest plant database. Search the site's more than 38,000 listings by plant name to find out how to care for your new friend; you'll get tips on fertilizing, watering, and lighting. There's also an advanced search engine that lets you search for specific plant characteristics.



admitted to the hospital you want and even how to make your stay safer.

Research **Executive Pay**

"Truckloads of cash" is such a vague term; quantify his salary by searching **ECOMP**'s [ecomponline.com] executive compensation database. Financial researchers and other curious folks can unearth the salaries of executives here: Search by company name, ticker symbol, location, or business type. Once you find matching companies, you can get summaries for the top execs—just click on the name for details. Definitely useful when you're asking for a raise.

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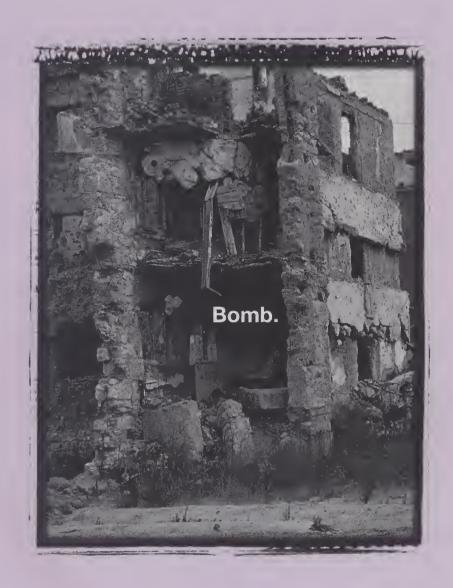
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Tomorrow Never Knows

Dreaming up the future is a dangerous business. But these eight science fiction luminaries got it right more often than not



BRUCE STERLING has written three short-story collections and eight science fiction novels. He also edited *Mirrorshades: A Cyherpunk Anthology*, the definitive document of the cyberpunk movement. He lives in Austin Texas, with his wife and two daughters.



the Hugo and Nebula awards for best novel in both 1986 and 1987 for Ender's Game and its sequel, Speaker for the Dead. Card is currently working on the screenplay of Ender's Game. He and his wife. Kristine, live in Greensboro, North Carolina, and are the parents of five.



GWYNETH JONES has won two World Fantasy Awards and is now working on Castles Made of Sand, part two of the near-future rock n' roll utopia story Bold as Love. She lives in Brighton, England, with her husband, son, a Burmese cat, and some fish.

t

HEY WRITE ABOUT THE FUTURE. THEY ENVISION FLYING CARS AND WARP drives and goo guns that can take down a man at 20 paces. But science fiction writers are neither prophets nor oracles. Many use the future only as a venue for stories about current issues spanning politics, economics, and the human condition.

Yet even if science fiction writers don't claim to be latter-day Nostradamuses, they're often uncannily accurate. From the Web to wireless communications, much of what they envisioned 10 or 20



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years ago has come true.

Of course, just as much has been completely off base.

Six science fiction novelists, a *Star Trek* writer-producer, and a former Speaker of the House who's both a novelist and a futurist answered our challenge to look back at the science fiction of the past and answer two simple questions: Where did you get the future right? And where did you goof?

Our panel includes Brannon Braga, David Brin, Orson Scott Card, Gywneth Jones, Newt Gingrich, Kim Stanley Robinson, Dan Simmons, and Bruce Sterling. of the Internet or used a computer myself.

When radio and television came on the scene, their first promoters hyped the way these inventions would bring haute couture to the sweating masses. Instead, they brought soap operas, scandal, and demagoguery. Capitol tagged the idea that it would be porn and games, not high culture, that drove the juggernaut of fame through the Net.

BRUCE STERLING: In looking back over the past 22 years, I think it was a grand success to realize that big, dorky geek computers were going to become incredibly

Internet access screens, and vice versa. I had people getting bored with fictional soap operas and watching their real-life neighbors on TV and, generally, news and information/infotainment programs proliferating wildly—at the expense of fictional entertainment of all kinds. I think the conflation of TV-Internet-telephony is still not quite what I depicted, but it's pretty well there.

KIM STANLEY ROBINSON: I wrote about print-on-demand and electronic "paper-backs"—like PalmPilots, filled with your personal library of thousands of volumes—



KIM STANLEY ROBINSON is the author of the Mars trilogy—Red Mars (which won a Nobula Award), Green Mars (which won a Hugo), and Blue Mars—as well as Antarctica and A Short, Sharp Shock.



DAVID BRIN's 1989 thriller, *Earth*, foresaw both global warming and the World Wide Web. His latest work, *Foundation's Triumph*. brings to a grand finale Isaac Asimov's famed *Foundation Universe*.



DAN SIMMONS's first novel, Song of Kali, won the 1986 World Fantasy Award. He won a Hugo Award for Hyperion, published in 1989. Simmons's most recent novel is Darwin's Blade.

'In looking back over the past 22 years, I think it was a grand success to realize that big, dorky geek computers were going to become incredibly fashionable'—STERLING

Y-LIFE: Where and when did you get the future right?

ORSON SCOTT CARD: [In 1978], in my first published book, *Capitol*, the stories took place in a future world where computers were easily accessible to everyone, and where public and private conversations on a vast worldwide computer network were as important to the culture as television. This was before I had ever heard

fashionable. And the Sealand data haven in the North Sea is similar to the data havens described in my 1988 novel *Islands in the Net*.

GWYNETH JONES: The most near-future scenario I ever wrote was *White Queen*, which came out in 1991. I correctly anticipated the explosion of Web cam surveillance in the workplace; digital TV pictures that you can manipulate with your remote; and the way people can use their TVs as

in *Icehenge*[1984] and elsewhere, including the *Mars* trilogy. But I think I got these ideas from an essay by Frederick Pohl, and really they're all out of Dick Tracy's wrist radio anyway. My better calls have been more historical than technological, and mostly by accident. Examples include the discovery of Mallory's body on Everest and the little revolution in Nepal, both predicted in *Escape from Kathmandu* [1989]. Also, dou-

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ble-deck freeways and computer-guided cars—which are coming soon—and the "Star Wars" defense system boondoggle are described in *The Gold Coast* in scarily accurate detail.

DAN SIMMONS: In *Hyperion*[1989], Martin Silenus speculated on people becoming slugs—keyboard potatoes—while plugged in to the Web day and night. This was written in 1985, before there *was* a World Wide Web.

BRANNON BRAGA: In Star Trek: The Next Generation we were using "pads," which were personal data devices. The first time I saw a Palm, I said, "Hey, that's what Captain Picard and the gang use!" And my first Motorola Star-TAC flipped open just like a communicator—so communicators are not only real, but they have an even better range [than those on the show].

NEWT GINGRICH: Since 1995, I have proposed giving every child a computer in the same way children are now given textbooks, and that is slowly beginning to happen. In *To Renew America* [1995] I predicted that as the Internet grew it would become increasingly specialized, with expert niches providing brand-new sources of income for specialists, and that we would see more and more uses of this network for remote applications—such as medical procedures performed from the other side of the world.

DAVID BRIN: I predicted the fall of the Berlin Wall, and in *Earth* [1989] I seem to have portrayed something very much like the rambunctious World Wide Web.

Y-LIFE: And where did you get it wrong?

BRIN: Why ain't I rich? Because while I fore-saw the incredible richness of the Internet—its fecundity and service to human independence and creativity—I never quite realized how much money would flow through it. In other words, nowhere in *Earth* do I depict Web sites with banner ads. I've learned a lesson: When predicting trends, always try to spot the likely flow of money.

JONES: Virtual reality. I think virtual reality (which I called *virtuality*, a term that looked good at the time but never in fact caught on) was the space travel of the '90s for me. I expected it to be well on the way to becoming a consumer good and a seamless wraparound experience by now.

ROBINSON: I wrote of the endless prolongation of the U.S.S.R. in a book published in 1988.

GINGRICH: One of my favorite initiatives was the Northwest Ordinance for Space, which I introduced to set the terms by which a sufficient number of people living on the

moon could apply for statehood. A lot of people thought it was outlandish, and in retrospect, I guess they're right. Similarly, my advocating space tourism in *Window of Opportunity* [1984], including a suggestion that weightless honeymoons could be very popular, may have been rather premature.

BRAGA: Certainly the familiar technologies like transporters and warp drives and holodecks are nowhere near to becoming real.

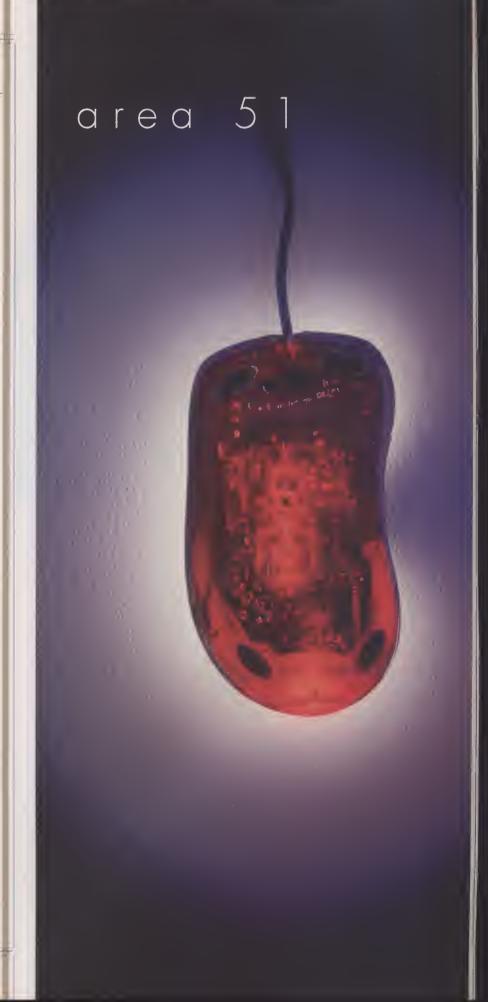
Because Star Trek was introduced in the '60s, a lot of the technology that has carried over to the recent series is antiquated. I mean, look at the size of some of the computers. They're huge! Laptops on Voyager are laughably big, but they have to be because if they weren't, you wouldn't notice them, and they wouldn't serve their story purposes. I believe that in the future, technology will be invisible. But invisible technology isn't very fun to watch.

Also, the original *Star Trek* talked about World War III, which was supposed to take place in the 1980s. *Star Trek* has always very slyly avoided showing [present-day] Earth, which I think is very clever. We consciously try to devise stories and technologies that will not date the show, that will keep it timeless.

SIMMONS: In Flashback, a novella published in 1993 that I wrote some years ago, the United States early in the 21st century was more or less being managed by the efficient Japanese, while most of the U.S. population was addicted to a cheap drug that allowed users to relive parts of their lives in real time. The Japanese were the active future; Americans were wallowing in their happier former days. It's fun to speculate...but it's embarrassing to be passé before the book comes out.

STERLING: I never hesitated to write stuff where I knew things would be completely fantastic and impossible. The Difference Engine is completely contrary to fact; it imagines that Charles Babbage [a 19th-century inventor considered by some to be the "father of computing"] had a big commercial hit [a steam-driven calculator], and that the Victorians had a computer revolution. Still, I think it really does the job the genre ought to do—not predicting future events, but deepening understanding through new perspectives, and expanding the realms of what is possible.

CARD: Some aspects of the "remote" future of *Capitol* are already here, and some things that seemed obvious to me—the Web becoming the primary source of news; widespread, multiplayer, real-time games—are still waiting for "infinite" bandwidth and the advent of microcharges to make a true mass market possible on the Web.



Live Long

THE PARTICIPANTS IN THIS YEAR'S roundtable foresaw vast networks and handheld computers and widespread surveillance, all of which are very real today. But many of them have also written about ways to prolong human life—and in this case, they may be surprised at how soon their predictions come true.

Take the settlers in Kim Stanley Robinson's Mars trilogy (1993–96), who in the mid-21st century learn how to strengthen and repair human DNA, thus extending life spans. The settlers record an individual's genome, then build a genomic library of small segments that are used to replace broken strands of DNA. In other words, they put together a genetic repair kit. Far-fetched? Research at Silicon Valley-based Geron Corporation indicates that introducing an enzyme called telomerase into human cells can reset their "clocks" and increase their longevity without altering normal function or causing them to become cancerous.

Brannon Braga says he focuses on genetic engineering and nanotechnology in *Star Trek: Voyager* because "not only does it seem like cutting-edge science fiction but...! believe it is going to be one of the earthshaking developments in human technology." It's going to happen a lot sooner than the 24th century; already, genetic engineering is used to change the life span of crops. And if we can create longer-lived corn, why not longer-lived babies?

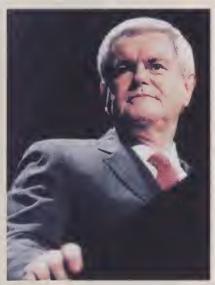
And then there are the "Poulsen treatments" in Dan Simmons's *Hyperion* saga (1990), which stretch life by decades (the treatments are named in honor of sci-fi writer Poul Anderson, whose work has often focused on longevity). Characters who appear to be 50 might really be 90 or even 150 years old. Impossible? Although *Hyperion* takes place centuries from now, living to be 150 may not be such a fantasy. We're learning surprising things about aging, and we're learning fast: Longevity may result from something as simple as eating less. Caloric restriction has been demonstrated to slow aging and extend life span in rodents, and primate study is now under way.

Beyond the research, there's an even clearer indication that life extension is imminent: The lawyers are already lining up. At an Institute of Nanotechnology conference in November, a presentation titled "The Human Genome Project and its Implications for Life Extension" was preceded by—what else?—"The Legal and Ethical Implications of Life Extension Techniques."—G.B.

Y-LIFE: The Internet is already altering the way we perceive the world. Which of the five senses will most be affected by technological developments?

STERLING: If I had to make some counterintuitive choice, I'd say our sense of balance. By this I mean a really sudden and jolting understanding that things are just not as they were, and we can never go back. The Net is really and genuinely changing

be) around them, whether they're viewing a house they might buy, or playing an adventure game. They won't be content to stare into a faux 3-D screen or use a disorienting goggle headset. The question is: Will this kind of technology eventually lead to the customers' developing their multitasking skills (being in two places at once); or will it entail some kind of REM paralysis [the motionlessness of the body while asleep



NEWT GINGRICH The politician who first proposed a laptop for every child, Gingrich coauthored a novel, 1945, with William Forstchen, and wrote Window of Opportunity: A Blueprint for the Future (1984). He is currently a political analyst for the Fox News Channel.



BRANNON BRAGA is executive producer of Star Trek; Voyager. He has written more than 50 Star Trek episodes, including the final episode of Star Trek: The Next Generation, for which he won a Hugo Award for excellence in science fiction writing. Braga cowrote Star Trek: Generations; Star Trek: First Contact, and M:1-2.

'While I foresaw the richness of the Net, I never realized how much money would flow through it'—BRIN

human life now. It's not up on that Mr. Wizard pedestal anymore; it's in your hip pocket. This can be disorienting. Every great leap forward has aspects of an out-of-control tumble. Ecstasy is never that far from dread.

JONES: Touch. I'm looking at something called *proprioception*. There are a whole lot of people who won't buy something unless they can touch it, handle it, and pick it up. Not everybody in the mass market has highly developed visualization skills. People will want to *feel* the space (that's supposed to

and dreaming] for the end user—which is the usual result favored by science fiction writers, and could have fairly grotesque results? (See "Obesity is not fun....")

simmons: Blech. I've never even understood what people mean when they say they're having cybersex. Don't you have to keep your hands on the keyboard? However much the Net evolves, it's not alive. We live in the world. We have bodies and eyes and skin and fingers and genitalia and other instruments of exploration and perception

that are perhaps evolution's greatest gifts to us. Current virtual reality efforts are a pisspoor substitute for reality and will probably remain that way for a long, long time.

BRIN: The senses look outward. We'll make the most progress by getting kids to learn how to *perceive* honestly, especially admitting to themselves their own mental biases and the ways they warp perception.

BRAGA: Without a doubt, vision. We're a visual species; we rely on our vision more than any other sense. Still, I think it would be really cool if we could find technology that would augment the senses we're lacking, like smell. Smell is the most mysterious sense of all, the one we know least about.

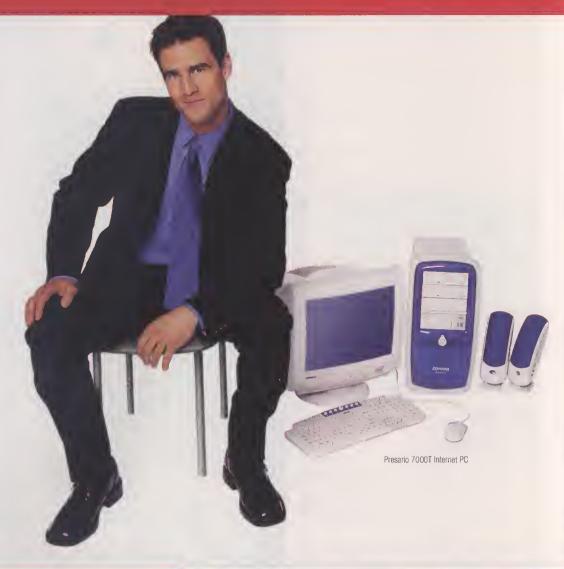
GINGRICH: All of them. Our great-grand-children will have a virtual reality system with full smell, full kinesthetic feedback. And it will make *Saving Private Ryan* truly terrifying—and R-rated scenes, truly exhausting. If we think we have ratings challenges today, wait until direct, interactive, virtual reality and cyberrelationships at a distance become truly intense and personal.

ROBINSON: The sense of touch, in that the feeling in your butt will go away and the fingertips will be sensitized. No, no! What if in 1900 you had gathered H.G. Wells and Yevgeny Zamyatin and Joseph Conrad and kept asking them questions about the new technology of the telephone, ignoring the upcoming world war and the Russian Revolution and everything else? Sorry to go into rant mode, but surely something so groovy as the Internet ought to be aimed at changing the world.

CARD: You're making the mistake of thinking of the senses in the old terms, as five ways of collecting data through the human body. The Internet plays to far different senses: the comfort of community, the thrill of anonymity, the sense of connectedness through e-mail, among others. The sense of smell is nice, but trivial in human life compared with the sense of belonging that can come from finding a like-minded community on the Net. Those deep hungers for human connection, for the ability to remake ourselves, for a sense of control over our lives and reputations—those are the senses that the Web will speak to. In fact, it is because the Web already does a remarkable job of feeding these senses, despite the relatively primitive technology and laughably low quality of most Web offerings, that people sign on and keep signing on. They aren't there for the content. They're there for each other. Trapped in an apartment building or suburban neighborhood of strangers, they come to the Web to find their tribe.







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Cyberspace Odyssey

In Internet time, it's the dawn of man. But what lies beyond the infinite?

ILLUSTRATION BY THOMAS REIS



Only Connect

It's here: 2001—the year for sci-fi dreams to come true. It's not what we expected **BY ROGER EBERT**

O YEARS IN LITERATURE ARE MORE FAMOUS than 1984 and 2001. Once they seemed unimaginably distant. Now time has claimed them. When I attended the world premiere of 2001: A Space Odyssey in 1968, I had little doubt that spaceships would soon be shuttling back and forth to the moon, and I was optimistic that we would find proof of intelligent life on other planets. Now Neil Armstrong's flag fades in the lunar noon, and the spikes and valleys of the SETI@HOME screen savers dance down 2 million monitors, finding no life, no intelligence, only the breathing of the stars.

Yet 2001 does not disappoint me. In the 32 years since film-

maker Stanley Kubrick and author Arthur C. Clarke gave us their vision of the future, a tool more amazing than a spaceship has appeared in our homes. It is the Internet. To shuttle to the moon, however wonderful, would be a mechanical process, an extension of planes, trains, and automobiles. To be able to instantly communicate with anyone alive, to roam through the sum of human knowledge, is more astonishing, and a greater cause for hope.

The Internet today is at the *Apollo 11* stage, a clunky crate held together with baling wire and the genius of its pilots, but how wonderful it is and how fundamentally revolutionary—the ultimate destination of letters and numbers, literacy, printing, broadcasting, and the silicon chip. It is a good thing the Arabs discovered the uses of the zero, because by setting it next to the numeral one, they unlocked not only the digital system but also DNA, making it possible to link our bodies and minds in an entirely new way.

DNA and the Internet, of course, have a rendezvous with human destiny. In his novel 3001: The Final Odyssey, Sir Arthur hypothesizes the Soul Catcher, a computer sufficiently evolved that it can contain the entire contents of a human mind: its memories, its instincts, and its reasoning power.

When they come into being, I imagine, our Soul Catchers will be in continuous communication with the Internet, e-mail will travel as thoughts, and software will augment our memories, speed our reasoning, and search the planetary database for information.

We will begin our consciousness in a body, inevitably, and after happy childhoods upload ourselves into cyberspace. Cloned human bodies, without minds of their own, will be available like rental cars for us to occupy when we want them—for a walk in the woods, procreation, recreational eating and drinking, and so on. One day we'll feel like "driving" a black body; the next, a white. When after aeons we grow weary of the planetary chatroom, we'll bequeath our memories to friends, and Command-Delete ourselves into the Trash.

Millions now alive will experience movies transmitted directly to the sensory centers of the brain. In the nearer future, the body and the Net will converge in bioengineered tools. Cell phones will become an appliance like eyeglasses or hearing aids. The receiver will be embedded in our ear; the mouthpiece, in a tooth.

None of this is science fiction. All of it is a logical extension of technology now available or foreseeable. Whether it is an improvement or not remains to be seen; new technology has a way of shouldering itself into human life regardless of our wishes. Whatever form the new technology takes, we can be sure that the Internet will form its matrix. It is the one invention in our lifetime that, with its chips and languages, will outlast all others.

A thousand years ago, a global consciousness was trying to be born. The Vikings had visited North America, and Europe knew of China, but many thought the world was flat and that, for practical purposes, it came to an end a long horseback ride away from home.

In Europe, the Year 1000 equivalent of the Internet was the Roman Catholic Church, which was everywhere, spoke a universal language not corresponding to the tongues of ordinary men, contained all knowledge, enforced a rigid hierarchy, maintained lines of communication, and had a service provider near



you. Asia, Africa, and the Americas had their own networks. Religion was the electricity—the stuff in the lines that maintained the channels and got the data to the end users.

A parallel Net existed in the Jewish world, which was longer-lived than any other social system because of its indomitable programming language, the Talmud. It worked its lines of communication like the Catholic Church did, with a more personal interface: Mac to its Windows. I am not at all surprised by a new book, *The Talmud and the Internet: A Journey between Worlds,* by Jonathan Rosen. Consider the accumulation of a wealth of commentaries on the Talmud, which add to its worth and make it, Rosen says, theoretically infinite: In this process can't we glimpse the skeleton of the Web? Meanwhile, African kingdoms, Chinese emperors, and Australian aborigines laid their own songlines.

What was being demonstrated in these predigital Internets was the fundamental need of humans to talk to one another, to share knowledge, to assert truth, to enforce values, to hear gossip, to make money, and in general to break free of one's box of time and space. All worked in an orderly way. The individual person and the great world were in essential harmony. Only in the last tumultuous century did men begin to fear that the lines of communication were outracing them, that history was hurrying on without them on its mindless, dreadful missions.

The Internet has restored the balance. We are in touch again. We need some decades to calm down and discover what has happened, to find out how this global weave of thought has wired us together—but it has. We were not alive when man discovered the uses of fire or exploited the wheel, but we are alive now, and great is my awe that I can take these words and send them into the world and expect your response. The Internet is like one big buzzing SETI program, but this one does find signs of intelligence—about a billion times a second.



Distant Prophet

Arthur C. Clarke dreamed it all up; now he reflects on how much of it came true BY BILGE EBIRI

EW PEOPLE TODAY, BESIDES A HANDFUL of aging rock stars and the odd retired politician, can be described as living legends. But for more than five decades, Sir Arthur C. Clarke has been affecting not just the way we think of our world and the cosmos but also the way we live our lives. Long before director Stanley Kubrick asked him to collaborate on the screenplay for

2001: A Space Odyssey, Clarke had established himself as a giant in the field of science fiction. He had also practically fathered satellite communications, after a 1945 paper of his posited that devices could be placed in geostationary orbit (now known as Clarke Orbit) around

the Earth. Moreover, he was one of the first to suggest using satellites to help forecast the weather.

In 1956, Clarke permanently relocated to Sri Lanka, moving into a space-age home that gave new meaning to the term *early adopter*. Now 83 and confined to a wheelchair by post-polio syndrome, Clarke continues to work at a bewildering pace, addressing audiences ranging from the Carnegie Mellon School of Computer Science to the United Nations, and steadily releasing novels.

As Isaac Asimov once said, "No one has done more than Clarke in the way of enlightened prediction." Here's what's on his great mind now.

Y-LIFE: You've been using modem technology for quite some time now, since before its widespread availability. When was the first time?

CLARKE: Almost 20 years ago, at about 300 bits a second. I remember using it during the making of 2010. And I don't remember when, but I once had a long interaction online with [defense lawyer] F. Lee Bailey during a fictional murder case, involving a robot house—named Arthur, oddly enough—charged with murdering its occupant. I can't recall it all that well, but I still have this correspondence on a floppy disk, which I can no longer read.

Y-LIFE: What connection speed do you have now?

CLARKE: About 2K most of the time! No, normally it's a 26Kbps connection. But we're hoping to get an upgrade pretty soon.

Y-LIFE: Even though you use e-mail, you've admitted that you're wary of using the Web.

CLARKE: The trouble is that access here is so slow; it takes ages to get anything on it. Even when you get into the Web, you can waste so much time trying to find what you really want. The last time I used it, I foolishly typed my name into a search engine. And when I got 150,000 hits, I switched off.

Y-LIFE: Your fiction has envisioned many scenarios for the future. Which of your predictions do you feel were most correct?

CLARKE: Well, of course, the communications satellite is the most important one. I wrote a paper in 1945 that gave all the details of that—about the notion of placing communications satellites in orbit around the Earth—although it didn't happen for 20 years.

Y-LIFE: Have you followed recent developments in communications technology? Will satellites play a more significant role?

CLARKE: I'm following it as far as I can, but there's so much happening right now, it's hard to keep up. The interesting thing is that you have satellites, and then you've got fiber optics, which is absolutely incredible to me—that you can send so much information through a hair of glass. But of course, satellites do have a unique role. They can cover enormous areas simultaneously, and

CLARKE: Yes. Actually, I just wrote a piece for the London *Times* on exactly that. I've called it "2001: The Longest Year."

Y-LIFE: It's the year that won't end.

CLARKE: Yes. The next Mars probe, NASA's calling it 2001: A Mars Odyssey. And I'm a patron of the Dian Fossey Gorilla Fund, with Sigourney Weaver and Leonardo DiCaprio. And they just launched 2001—An Ape Odyssey.

Y-LIFE: Though a lot of the things predicted in *2001* have not occurred yet, people still see it as a very realistic vision of the future. Unlike, perhaps, *1984*, which may have lost some of its luster.

CLARKE: I'm very fond of a quote of Ray Bradbury's: "I don't try to predict the future. I try to prevent it." I think perhaps both 1984 and Brave New World helped to do just that.

Y-LIFE: But HAL himself is also a cautionary tale about technology, isn't he?

CLARKE: True. But on the other hand, civilization *is* technology. **Y-LIFE:** Still, don't we lose something in the process of technological advancement?

CLARKE: Thoreau said, "In wilderness lies the salvation of the world." And someone else said, "The more we're separated from nature, the unhappier we get." I'm lucky to have a beautiful garden around me, and a big lawn, even though I'm in the middle of the city. I quite agree that estrangement from nature leads to greater unhappiness. On the other hand, technology has shown more peo-

'Fiber optics...is absolutely incredible to me—that you can send so much information through a hair of glass'

access mobile receivers, so they will play an increasing role. But there are so many things you'd never have imagined. GPS is something we never thought of. I mean, I said in 1945 that they could be used for navigation purposes, but I was thinking of space travel. Not hikers...or explorers lost in the Outback. [Laughs]

Y-LIFE: Where do you feel your predictions went wrong?

CLARKE: I had a bright idea, years ago, of putting nuclear reactors in the seabed. The problem with much of the sea is that it's a desert, because the nutrients are trapped at the bottom. Nuclear reactors are good at making heat. If you sank one in the seabed, it would create a great thermal overturn. And the ocean would just bloom. However, I don't think it's a very popular idea nowadays!

Y-LIFE: Do you still believe artificial intelligence is possible?

CLARKE: Oh, yes, I don't think anybody really doubts it. Of course, what we have far too much of right now is artificial stupidity—that's not original, but if you have a computer, you know all about artificial stupidity. [Mimics HAL] "I'm sorry, Dave, I can't do that." In fact, at one time, my computer had that line programmed in it.

Y-LIFE: You've also talked about the concept of a "braincap"— a device that might help us directly experience sensory input, bypassing the eyes and other organs. Do you still believe that technology can transmit such things as senses and emotions?

CLARKE: Yes, definitely. After all, anything that is made up of electrical signals—which is all these things are, essentially—can be transmitted somewhere else. Of course, the technical problems can be enormous. But I don't really see any showstoppers.

Y-LIFE: Are you surprised at 2001's resilience?

ple the beauty of the planet than ever before in history. So it does work both ways. And technology does extend one's associations. I've made many friends through e-mail now, and re-established friendships with people I'd lost touch with. In a way, it's very heartwarming. The problem is, of course, you've got to deal with junk mail, and I'm right now composing a "Please leave Sir Arthur alone" missive that should go out to all the people I don't want to hear from.

Y-LIFE: Much of the development of technology and the Net has occurred in the U.S. and other Western countries. Do you expect to see more innovations from smaller countries like Sri Lanka?

CLARKE: Very much so. In fact, so many people from Asia are getting involved with the Internet world. All the Indians are going to America and making fortunes in the software business. I hope they'll come back, if only for a short time, to help fertilize their own countries. It's rapidly becoming one world. Look at what the Net is doing to China right now, despite their efforts to stop it. Of course, when you have direct satellite links, they've had it completely.

Y-LIFE: Some people feel that the notion of one world is not such a great thing.

CLARKE: Again, there are two sides to the coin. We all have neighbors who don't like us, or whom we don't like, but we're neighbors whether we like it or not. It's not just a global village anymore; it's a global family. As in all families, there are frictions and dislikes.

Y-LIFE: Do you still see technology as basically a tool?

CLARKE: Emerson once said, "Things are in the saddle, and ride mankind." Though technology has become a religion, you've got to try and take the good with the bad.

FOR SITES IN THIS STORY, PLEASE TURN TO THIS MONTH'S SITE ADDRESS GUIDE, OR VISIT WWW.YIL.COM/URL/0012/CLARKE.HTML

five senses OF THE WEB

How will the future Internet look, sound, smell, feel, and taste?



Sight

Radical new displays alter the way we see the Net—and ourselves
BY JULIAN DIBBELL



ILLUSTRATION BY JASON HOLLEY

ET'S SEE WHAT WE GOT WITH THIS SUCKER," SAYS Jerry, who technically can't see anything at all. Sixty-two years old, Jerry has been totally blind since the age of 36. But in a remarkable video clip available on the Web at ARTIFICIAL VISION FOR THE BLIND, you can watch him laboriously read a 5-inch-tall, sideways letter E on a computer screen electronically linked to his visual cortex, through wires running from a portable processor to electrodes planted beneath his skull. Moving a matchbook-size cursor around the edges of the letter with a joystick, Jerry sees it bit by bit, each patch showing up in his vision as a vague pattern of flashes—a starry night inside his head.

"Okay, let's go this way," he says, moving the cursor gradually to the left, until at last it comes together: "Aha! Yeah. I'm going to tell you that this *E* faces with the legs going up in the air."

Not much of an accomplishment, maybe, even for a blind man. But as cyborgs go, Jerry is a milestone—a human being who sees data the way computers do, as pure electrical signals. The biomedical engineers behind his vision system claim that with a miniature video camera plugged in to his electrodes, he can make his way around real-world environments as tricky as the New York City subway system.

But to anyone with even a little geek in him, it's the way Jerry navigates digital space that fires the imagination. Ever since sci-fi writer William Gibson coined the term in 1984, cyberspace has been idealized in movies, comic books, and daydreams pretty

a dense array of microscopic beads in a sheet of transparent plastic. Dark on one side, light on the other, the beads flip sides in response to electrical impulses, "printing" text and images on command.

Imagine a book with e-paper pages and a library's worth of titles stored in its spine, each text available at the press of a few buttons. Or a tabloid-size newspaper with a Web connection built in for real-time updates.

All that's lacking in e-paper is full color and full-motion video, but another new technology—organic light-emitting diodes (OLEDs)—may fill that gap. Techniques for building OLEDs into flexible sheets aren't quite up to speed, but if they get there in five to 10 years, expect backpacks that burst into digital flames at the sound of passing sirens, tablecloths that ripple through color schemes as meals progress, and similar imponderables.

More immediately, OLEDs are finding their way into conventional settings, bringing cheap, rich graphics to the hitherto monochrome displays of cell phones, PDAs, and other consumer electronics. They are also helping to get the familiar old computer screen off our desktops and in our faces—literally. A company called **EMAGIN** recently announced it is building thumbnail-size, high-definition OLED displays into lightweight, head-mounted viewers.

While one can easily imagine the ways in which this technology will enhance video, sports, and games, in the end eMagin's displays may lend themselves most intriguingly not to virtual reality but to something often called *augmented reality*—the overlay of virtual imagery onto real space. Picture pilots eyeing phan-

Using highly focused miniature projectors, retinal scanning displays shoot an image straight into the user's eyeball

much the way Gibson envisioned it: a "consensual hallucination" wired straight into the brain, opening up visions of infinite, dazzling datascapes—"lines of light ranged in the non-space of the mind." Meanwhile, back in reality, we still look at cyberspace the way we have since the 1950s, through that cramped glass porthole called the computer screen. It's enough to make you buy a surgical drill and wire yourself up like Jerry.

Don't be so hasty. While leading artificial-vision researchers say it may be decades before cortical implants achieve remotely practical resolutions, if ever, the good news is that the monitor's long reign over our eyes is about to crumble. Driven by burgeoning information markets and the rapid spread of wireless Net access, the tech industry is in hot pursuit of several radically new kinds of displays. And in the end, these new interfaces might do more than just free us from our monogamous relationship with the beige box; they may also acquaint us with a new kind of cyberspace, one perhaps even more interesting than Gibson's. Instead of a parallel universe projected into our brain, the new cyberspace might be everywhere we look, beaming back at us from any surface of what we once quaintly thought of as the real world.

Consider the almost-ready-for-prime-time technology known as electronic paper. Inspired by paper's superior display qualities—crisp resolution, light weight, no need for a built-in light source—researchers have come up with clever ways to combine these qualities with the infinite rewritability of digital media. One strategy, pursued at the Xerox Palo Alto Research Center, embeds

tom cock pit readings that hover in the corner of their vision, surgeons consulting complex diagnostic images without lifting their eyes from the operating table, or aerospace workers seeing the manual page for whatever jumbo-jet part they're scrutinizing. All of these can easily be implemented with semitransparent visor displays lit up by mini OLED screens.

Which isn't to say some other next-generation technologies couldn't do the job as well, or better. A long-evolving technique called retinal scanning display (RSD) is finally reaching maturity and may become the augmented-reality device of choice. Its edge: no screen at all. Using highly focused miniature projectors, RSDs shoot a high-definition display image straight into the user's eyeball, "painting" it directly onto the retina one scan line at a time.

RSD maker MICROVISION, for instance, has plans to build its tiny projectors into cell phones and PDAs, allowing you to point your gadget at your eyes and conjure up a 21-inch virtual screen floating at arm's length in front of you. If Microvision can make that happen, it will have single-handedly finessed the greatest challenge currently facing the push for a wireless Internet: the scarcity of visual bandwidth on tiny, low-res handheld screens. The solution? Reducing a Web page to its bare bones. "What's happening is that software companies are actually having to reengineer the Internet to extract 95 percent of the rich content the Internet provides," says Microvision's Matt Nichols. "What we'd like to do is take a hundred percent of the Internet's capabilities and deliver [it] wirelessly anywhere you need it."

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Assuming any of these promises come true, what new ways of seeing can we expect in a world alive with animated surfaces and augmented realities? Outfitted with our featherlight, retina-painting contact lenses, we may grow accustomed to seeing office buildings sprouting giant virtual directories when we stare at them long enough. Or to seeing Cheerios boxes flashing at the supermarket because our networked home pantry knows it's time to restock. We may come to yearn for the tranquility of natural vision, and relish the moments when we get to toss aside the glasses and see the world the way God intended. But more than likely we will never get around to that. Natural or not, our wired view will have become integral to our worldview. And we will have come to need it like some cyborgs need a hole in the head.

JULIAN DIBBELL is the author of My Tiny Life: Crime & Passion in a Virtual World. He writes frequently about technology and culture.

FLASH FORWARD>>WHAT'S NEXT FOR...

TELEVISION

TILLING THE VAST WASTELAND

For years, Microsoft touted its WebTV service as the future of television. But with only about I million American households receiving the service and given the lightning-quick rollouts of recordable TV services such as TiVo and ReplayTV—Microsoft is making a new product with more functions than WebTV. Slated for a Christmas release, what Microsoft now calls UltimateTV will feature Net access as well as the personal video recording technology of TiVo. Still, it might be too late. AOL, which launched AOLTV this summer and is investing substantially in TiVo, is working on a similar service that combines AOLTV and TiVo technologies. What will this mean? Well, if Europe is any indication—there, 7 million viewers have interactive TV (as compared with the U.S., with fewer than 400,000 in place) — it will mean the ability to choose camera angles during sports games and television shows, as well as shop, play games, and send e-mail through the television, not to mention program it remotely using the Web. Already, an estimated 44 million Americans surf the Web while watching the tube. In the next few years, they'll be able to do it through just one device: Jupiter Communications forecasts almost 30 million homes in the U.S. using interactive TV by 2004.

FILM AND VIDEO

MP4: THE NEXT GENERATION

What the MP3 file format did for online music, MP4 will do for video, compressing moving picture files to as little as IO percent of their original size by filtering out visual information the eye can't per-

ceive. Feature films still take hours to download, but with broadband Net access becoming a reality for many Americans this will change quickly. One company, PACKETVIDEO [packetvideo.com], is already working on ways to utilize this technology on wireless personal digital assistants, such as the Casio Cassiopeia and the HP Jornada. In the next few years, PacketVideo hopes, this will mean movie trailers and video messaging on your cell phone. Further ahead, it may mean movies-on-demand on your wired wristwatch. While that technology is still years away, one modest example of things to come is Casio's Wrist Camera Watch, which can shoot low-res photos and preview them before transferring them to a PC.

ADVERTISING

"HFFFFRE'S T-COMMERCE"

By the year 2009, recordable TV services such as TiVo and ReplayTV will be in an estimated 82 million U.S. households. But these services—which include the ability to skin the commercials—are already changing the network revenue model. Advertising will be embedded in the actual TV programs, allowing viewers to click on items on the TV screen to purchase them—what some have dubbed "t-commerce." One company, Wink Communications, has already begun testing this with episodes of The Tonight Show with Jay Leno, enabling customers to use their remote controls to purchase CDs of featured musical guests.

COMPUTING

FACE-LIFT

Numerous groups in the field of artificial intelligence are studying the ability of computers to recognize human faces from static images and video. One program, Facelt, already analyzes facial shapes and features to match visages to records stored in a database. The next step in this research, called "affective computing" and currently being developed at MIT, is devoted to computer perception of emotions. The aim is to build computers that will be able to adapt themselves to the moods of their users. Indeed, soon your eyes may control where you go in cyberspace. ISCAN

> INCORPORATED [iscaninc.com] has introduced the "gaze-tracker," a video-based sensor that monitors

eye movements to move a cursor, allowing for hands-free computing.

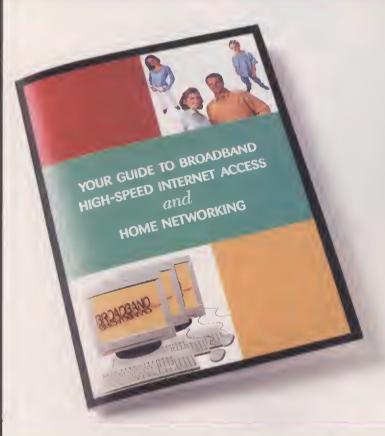
SURVEILLANCE

EYE SPY

Live-cam applications available through wireless devices and cell phones will revolutionize the way we watch one another. "Soon, you'll be able to dial access to a camera that is watching over your business," says PacketVideo's Anjeanette Rettig. "Or a 'nanny cam' could allow you to dial in from anywhere to watch your child in a day care center or at home." A boon for parents and business owners, sure, but also sports fans, voyeurs, and criminals. One solution: Eigen-space filtering, being developed in France, reconstitutes video images based on "socially correct" images-editing out such things as the user picking his nose and other undesirable sights.



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Sound

The Walkman made it fast; Napster made it loose. And now?

BY JOHN ALDERMAN

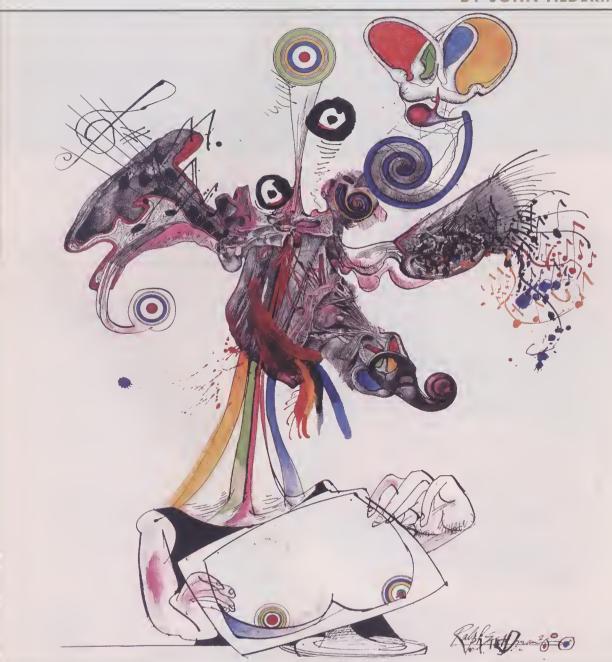


ILLUSTRATION BY RALPH STEADMAN

N 1979, LIKE AN ALIEN ARTIFACT DROPPED FROM above, the Sony Walkman appeared on the shelves of electronics stores and in the hands of tunefully minded tastemakers, who embraced it as a new way of bringing music into their daily routine. Suddenly, people could live within a personal, portable soundscape. Even the dreariest morning commute was transformed.

Today, the Web has changed the world of listening just as significantly, allowing millions to sample and share sounds both new and old with astounding ease. But jolts even more dramatic are on the way, as rapidly accelerating technologies promise not only to make our ears more useful but also to enhance our aural pleasure on a vast scale. How we listen, where we listen, and what we listen to are all about to change, once again, forever.

Even as music lovers using Napster and Gnutella have hacked out a live, self-assembling global library and auditorium, the realm of hearing itself has continued to evolve. Modern listeners, whether they prefer metal or electronic music, have learned to enjoy loud, booming screeches rather than fear them. The inclusion of sounds that fall outside music's traditional palettes—pulses, grinds, thumps, growls—has given all of us ears that are more sophisticated and eclectic. Whether we know it or not, we've begun to realize the dream of avant-garde composers like John Cage and Pierre Henry, a dream of hearing the world in new ways.

onto the Web and into mobile computers and telephones. Stephen Brewster, a lecturer at the University of Glasgow, is one of many researching the possibilities of these "abstract musical tones" as helpful aids to computing. Adding sound to cyberspace will, he believes, "allow you to get information across more effectively, just as in everyday life you both listen and look at things."

Personal Web pages scattered across the Net already play various tunes—often to irritating effect. The trick now is to utilize sound not as a frivolous annoyance but as a useful representation of information that, over time, becomes intuitively recognizable. "The success of personal stereos indicates to me that sound [will work] well for mobile computers," Brewster says. "It can allow you to use your eyes for looking at the world around you—when you are crossing the road, for example—rather than having to look at your device." This sound won't consist solely of musical addenda, he predicts: "The ear is so sensitive, if we just limit it to melodies it will be a real shame....It would get plain annoying to people to hear this dumb melody playing over and over again."

Whether or not it plays a cheerful little ditty, when you use that handheld computer to dial up a hotel on your way to Brazil, you won't need to worry about the language barrier. Real-time translation software, found at sites like AltaVista, is quickly being combined with voice recognition. Not only will you be able to carry on simple conversations with your computer, you—or, more pre-

Whether we know it or not, we've begun to realize the dream of avant-garde composers like John Cage and Pierre Henry, a dream of hearing the world in new ways

The Web offers us a connection to all of these novel sounds, but seeking them out proves just how difficult it can be to navigate such an immense universe. Encyclopedic efforts like **LISTEN.COM** and the labyrinthine genre lists at **MP3.COM** are stretched to breaking as categories are added: "New Prog," "Krautrock," "Abstract Ambient Electronica," and more. Consider what most people might have regarded as music 15 years ago, and then ponder what we listen to today. Would Madonna's aptly titled single "Music"—full of squeaks, beeps, and buzzing, Vocoder-heavy lyrics—ever have cracked the Billboard 100, let alone hit the top? Undeniably, we're already hearing things differently.

We're about to hear more. What's coming down the pike is about more than just music. "People are starting now to think about how you can represent data with sound," says Kenneth Newby, a professor of interactive arts at the recently established Technical University of British Columbia and a noted composer, musician, and video-game sound designer. "Some of it looks pathetically stupid," he concedes. "But that's the way all these things begin."

As our computer screens continue to overload our eyes with ever-denser walls of visual input, our ears offer broad new avenues through which to communicate. In the Japanese city of Osaka, subway travelers hear a specific tune at each stop, alerting them in a way that becomes natural and eventually subconscious. Similar auditory cues, dubbed "earcons," may soon find their way

cisely, it—will also be able to speak to others in a variety of languages. The newly released **GOTOWORLD.COM VOICE PLUG-IN** is a first step in that direction, allowing the user to hear written instant messages voiced in one of six different languages. But a real sea change will occur when our computers can accurately recognize and translate our own *voices* into other languages, bypassing text altogether. At that point, English will cease to be the de facto language of the Internet, as millions of wired Chinese and Japanese users will finally overcome the language barriers of the online world.

But until then, the realm of music will fuel most of the development in sonic technology. Indeed, there is a growing expectation—even among the industry's own executives—that we'll soon have all of our music whenever and wherever we want it. "I would trade ownership of my 3,000 CDs for access to my 3,000 CDs wherever I go," says Ted Cohen, vice president of new media for music publisher EMI. Many like-minded music-biz executives are betting that we'll soon be carrying cell phones that double as stereos, with labels selling what Cohen wants: access rather than ownership.

The technology is quickly falling into place. Samsung released an MP3-playing phone this year, and many others are positioning themselves to compete in this exploding market. With backing from Sony and others, **GIG.COM** is hatching big plans to create "Jukebox in the Sky"—its version of the oft-discussed idea of total access to all music all the time, utilizing a massive database of songs

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accessible through a worldwide network of storage sites.

The possibilities for music creators appear to be even greater. This year has seen the release of a pocket-size portable recording studio, the **ZOOM PS-O2 PALMTOP STUDIO**, while musicians can now meet online for sessions together in virtual studios like **LIVE JAM** and **ROCKET NETWORK**. And though the audio engineers of the '60s and '70s may be a dying breed, a nation of bedroom whizzes is taking over, with a historically unrivaled array of software tools.

The fabulously transformative power of these new technologies is opening up many strange and wonderful possibilities. Composer and technologist Tod Machover, for one, helped build fantastic devices—with names like "gesture wall" and "rhythm tree"—for his **BRAINOPERA**. Live performances of the work are usually preceded by hands-on play by the audience, with Net-connected, computer-controlled "hyperinstruments" available for those not on location.

While the future of networked sound looks wide open, the ability to stay in touch with the past is simultaneously preserved on the Web. A number of traditions once threatened with imminent

extinction have gained renewed vigor through the Web. A growing number of sites such as **THE DAKOTA LANGUAGE HOMEPAGE** are keeping alive the sounds and meaning of languages whose survival had been in danger. There are also Web communities that teach and preserve the arts of African drumming, French medieval song, Tuvan throat singing, and many others now resurging.

Internet users may be busy compiling that personal sound track, or learning to journey through worlds online and off with new sounds guiding the way, but it's the capacity to stay instantly in touch with one another, and with our collective past, that makes the Net so powerful. We built it, and we inhabit it, so it's no surprise that the sounds the Net now carries tend to reflect the strange, the familiar, and the sometimes ghostly remains of what has come before. By listening to the past, we shouldn't be surprised to learn that it's already hinting at the sound of things to come.

JOHN ALDERMAN *is the author of* Sonic Boom: MP3, Napster, and the New Pioneers of Music, *to be published by Perseus Books in February*.

FLASH FORWARD>>WHAT'S NEXT FOR...

MEDIA

TALKING HEADS

Soon we'll all be nurturing our inner Phil Spector: Self-publishing is finally going audio. The virtual sound studio—pioneered by **BEATNIK**'s [beatnik.com] you-too-can-remix-Madonna applet—is the next Really Big Thing, and that buzz you're about to hear is called user-generated media. The tools are still clunky and best viewed with broadband access, but for a taste of what's to come, test-drive **ODDCAST**'s [www.oddcast.com] "online video engine," which lets you edit your music videos. **GIVEMETALK.COM** allows anyone to play radio God with its "do-it-yourself talk radio" service. Just a bunch of geeks? Hardly; 46 percent of surfers polled recently by Cyber Dialogue expressed an interest in realizing their creative potential via mouse and modem.

WEB BROWSING

WALLS OF SOUND

What's worse: Muzak itself, or the fact that everything from discount stores to elevators forces it down your throat? More and more Web sites seem blissfully unaware of the agony of force-fed music, and poorly synthesized MP3 plug-ins are reaching epidemic proportions. Fortunately, personalization features are being extended to Web sites' background music. Eventually, says Ed Lopez, Cyber Dialogue's media and entertainment analyst, no two people will have the same audio surfing experience.

ADVERTISING

NOWHERE TO HIDE

"Voice spam" will soon be ringing up a cell phone near you. But before you

toss your StarTac down the commode, consider this: Advertising is most

annoying when it pitches products for which you have no use whatsoever. Marketers know this, so before they mount an assault on your wireless connection, they're brainstorming ways to make voice spam as inoffensive as possible. At Andersen Consulting, Rick Joyce researches ways to deliver ads so that "people see it as a benefit or a value, and not as an intrusion." The likely answer centers on location-oriented devices, posits Beatnik's CEO, Lorraine Hariton: "You'll get off the plane in Chicago and get an ad for the pizza in [that] airport." The trend promises to make online radio ads more relevant as well. While Boston listeners might hear an ad for, say, baked beans, the Manhattan crowd gets served a bagel jingle instead.

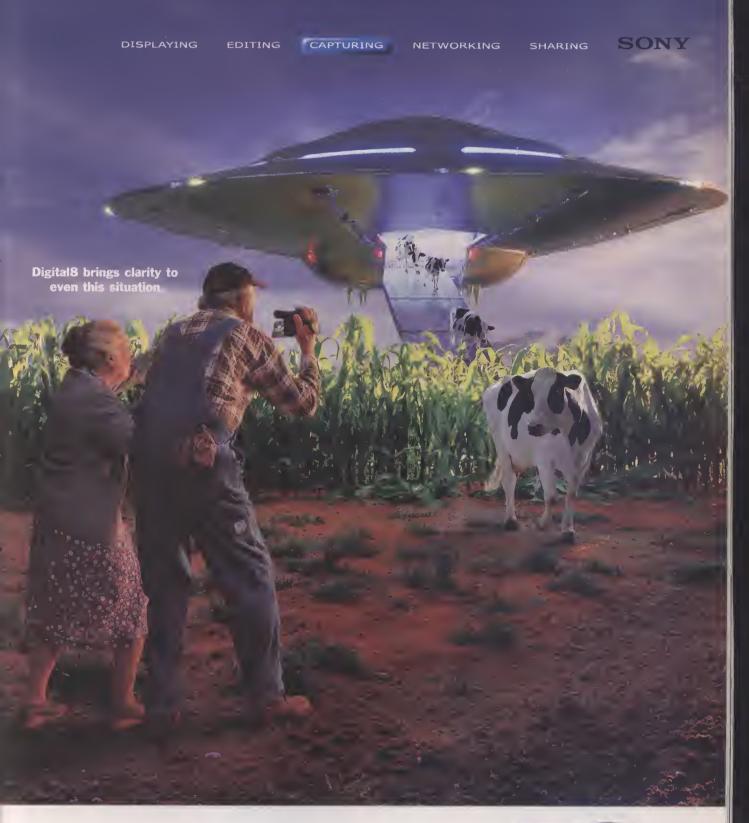
HEALTH

LEVELING THE LISTENING FIELD

Someone said, "Online, we're all 6-foot-2 and

blond" (well, the guys, anyway). Similarly, the Net's chatrooms and bulletin boards leveled the field for the deaf and hard-of-hearing communities, giving them unprecedented access to the culture at large. But as instant messaging and other forums become sound-enabled, the deaf risk getting locked out again. Working to keep that from happening are people like Sheila E. Griffie, vice president of sales at WYND COMMUNI-CATIONS [wyndtell.com], a wireless service provider for deaf and hardof-hearing customers. "Wireless gives [the hearing-impaired] many of the same capabilities we take for granted, like being able to contact someone using text-to-voice [messaging]," she says.





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Change the way you see the world."

Smell

Get ready to inhale the Net—from pizza to peppermint to new cars

BY BEN GREENMAN

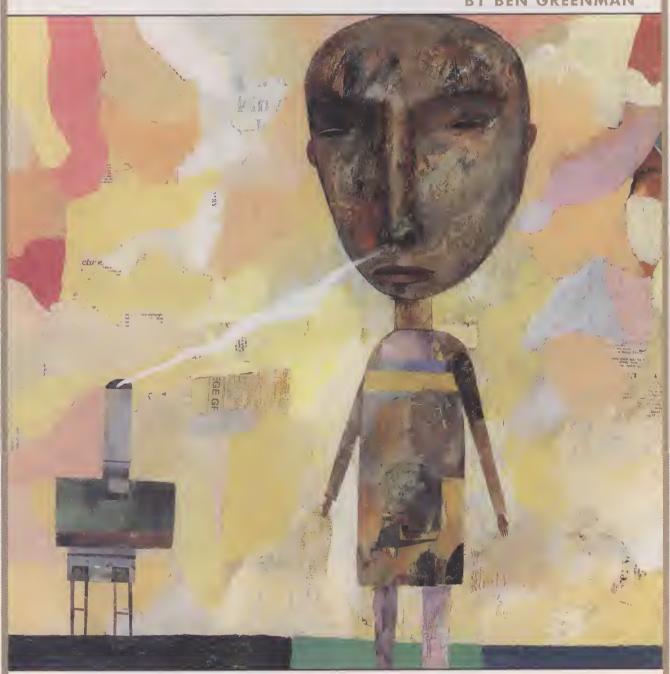


ILLUSTRATION BY JORDIN ISIP

HE WEB STINKS. CRITICS HAVE BEEN SAYING THIS for years, but these days it's truer than ever, thanks to DigiScents Inc., a California-based company with a just-so-crazy-it-just-might-work idea about how to transmit smells across computer networks. Since DigiScents made its brave foray into synthetic olfaction in March, virtual-reality engineers, Web pundits, and other interested parties have been watching, waiting to see if the world is ready for a Net that smells. The fact that DigiScents' founders are scientists who have worked with the human genome, rather than dot-com charlatans looking for a quick million, suggests both the complexity of the issue and the ways in which recent discoveries about olfaction are broadening the boundaries of cyberspace.

At the heart of DigiScents' plans is the iSmell Personal Scent Synthesizer, expected to be on the market early next year. It can best be described with the somewhat oxymoronic phrase "smell speaker." The iSmell works in roughly the same way as a printer, but instead of combining basic colors to create complex pictures on paper, it combines basic scents to create complex odors, which it then puffs into the air next to the computer—and, presumably, into the waiting, willing nose of the computer user. Printing pictures, of course, is simpler than generating smells, but not much simpler: While color printers require only a handful of primary hues, the iSmell uses 128 basic organic scents to generate thousands of familiar fragrances, from cinnamon to peppermint

who rank right up there with used-car salesmen for their annoying persistence—could be entirely replaced by blinking links on corporate home pages. Click here to sample the new Estee Lauder scent. Click here for a whiff of this season's Calvin Klein cologne. Click here to sample new apple hand lotion, and here for pineapple. Florists, of course, would kill to add olfactory information to their digital displays.

But there are several other businesses that could profit from e-scents. Tourist destinations could tempt potential travelers with the smell of the sea or the forest. New Age sites could add aromatherapy to their e-commerce menu. Online gourmet catalogs could allow potential customers to get a whiff of their wares, from cheese to chocolate. And even sex sites could get in on the act, adding musk and sweat to the other prurient synthetics (moans of pleasure, vibrating mice) to create a more convincing performance.

Scientists have long known that smell affects the most primitive parts of the brain—the pleasure centers, childhood memories—so any company that could effectively deliver compelling scents would have a distinct advantage over the competition. And with customization and personalization tools, the experience would be even more-predictably pleasurable. Who wouldn't want to visit a site that consistently creates a feeling of womblike comfort, or reminds you of the food that your grandmother used to cook?

Of course, if smell is such an effective tool in controlling human

Who wouldn't want to visit a site that consistently creates a feeling of womblike comfort, or reminds you of the food that your grandmother used to cook?

to vanilla to pine. And when DigiScents says that it intends the iSmell for home use, it's nothing to sneeze at: The device is being priced at under \$150, which makes it as affordable as a scanner or Web cam.

DigiScents isn't the only company putting its money where the world's nostrils are. There's Senselt, in Tel Aviv, Israel; AromaJet.com, in Texas; and TriSenx, in Savannah, Georgia (which is, it should be noted, at the vanguard of digital taste delivery, having devised a mechanism for remotely designing synthetic flavors and then squirting them onto small wafers; see "Taste," page 142). In addition to being one of the leaders in smell technology, TriSenx is also at the vanguard in digital smell delivery.

But if the race for digital smell were to end today, DigiScents would be the winner by, ahem, a nose. The company's FAQ is a fascinating document—but fascinating to read, not to smell, and fascinating mostly for its omissions. Underneath the traditional mix of *Brave New World* prattle and venture capital—courting razzle-dazzle, there are several fundamental questions left unanswered. Why the sudden interest in smell production? Is every possible technology necessarily a beneficial technology? Or a useful technology? Who benefits from a fragrant Net?

The easiest question to answer is the last of these. And the easiest answer to that question is the most obvious: the fragrance industry. Imagine if the perfume barkers in department stores—

behavior, it is also an effective tool for manipulating that behavior. Shopping malls learned this lesson long ago, which is why they pipe pizza- or hamburger-scented air into the stores adjoining the food court; the smells work as a kind of olfactory Muzak, stimulating the appetites of shoppers. In an Internet filled with so-called "pull smell" technology—smells that can be accessed voluntarily by consumers—this kind of manipulation presents no threat. But what about "push smell" technology? What if companies could purchase the odoriferous equivalent of banner ads, ensuring that the aroma of fried chicken puffed out of your smell printer every time you visited your search engine's home page? Searches for fried-chicken concerns would increase faster than you could say, "Colonel Sanders is the supreme ruler."

Over the past few decades, neurologists have made great strides in understanding how the brain works; one of the advances has been a better understanding of the vomeronasal organs (VNOs), accessory olfactory organs that have been detected and studied in animals. (In humans, VNOs have been found to exist, but scientist do not yet know if any sensory information is actually conveyed to the brain.) While the traditional sense of smell moves from the nose to the conscious brain, the VNOs bypass that conscious brain. When the vomeronasal receptors are excited, scientists hypothesize, we respond to odorants that aren't consciously recognized as smells—for example, to pheromones that

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trigger sexual arousal.

What if networked smell printers became sophisticated enough to produce pheromones and other chemical substances aimed at the vomeronasal system? An entire generation of consumers could grow up duped into thinking that they were making rational choices about their purchases, while in fact they were at the mercy of their own hardwired circuitry.

The real promise lies in the possibility of a wireless portable smell printer. We have Walkmans and Discmans, and Sony has begun to market a pair of goggles that permit portable personal television. A Noseman—which, thanks to miniaturization, will certainly shrink until it is the size of your average nose plug would move civilization one step closer to utter sensory solipsism.

If you're nervous about your big meeting, just dial up vanilla. If you're feeling drowsy, try the smell of coffee. And if you want to attract a mate, just push the button for a VNO-targeted, musk-inflected microfragrance, sit back, and wait.

BEN GREENMAN, a former executive editor at Yahoo! Internet Life, is an editor at The New Yorker.

FLASH FORWARD>>WHAT'S NEXT FOR...

SHOPPING

STINKING OUT LOUD

DIGISCENTS [digiscents.com], the firm developing smelling tools that online flower merchants could once only imagine, may be as crucial to sites such as Proflowers.com as rain is to a farmer. How long before you'll start smelling at your PC? "It's a matter of months, not years," says David Harel, cofounder of SenselT, a leading scent company that was recently acquired by DigiScents. The initial DigiScents product, slated for public release in the fall of 2001, will cost between \$80 and \$200. The problem is that it's hard to adjust the "volume" of a smell, explains Stuart Firestein, a professor at Columbia University whose research into the neurobiology of olfaction helped lay the theoretical groundwork for DigiScents' iSmell device. "If you change the concentration of a scent to make it 'stronger,' you'll change it from a grapefruit, say, to a rotten egg," he says. If the volume problem can be overcome, sales of essential oils, candles, and other fragrant products will enjoy the sweet smell of success.

GAMING

THE SMELL OF VICTORY

Get ready to inhale the stinky sweat in Duke Nukem, the burning rubber of Grand Theft Auto, or the smoky fire of Pokémon. Digi-Scents and researchers at Israel's Weizmann Institute are already working with game designers to incorporate scents into video games. Since DigiScents' release of a software develop-

ers' kit last March, more than 2,500 game designers have registered to create scent-enabled video games, says spokesman David Libby. In addition to a deal with Procter & Gamble, DigiScents has inked a deal with REALNETWORKS.COM to allow surfers to download free smells using RealPlayer. What's more, as Sony, Nintendo, Sega, and Microsoft compete to dominate the lucrative market for gaming consoles, expect each to offer smells that can be added to existing games (fresh grass for golfing, anyone?), working much as downloadable plug-ins and visualizations for MP3 players do now. But there are limitations: Consumers are unlikely to pay for locker room odor or the napalm option.

HEALTH

SCENTS OF BALANCE

Just as the Net's first sites about music featured only text, the first aromatherapy sites have had no smells to offer. But when iSmell devices are priced low enough to attract a mass audience, AROMAWEB [aromaweb.com] and other sites specializing in aromatherapy will roll out desktop healing. At Motorola's Human Interface Labs in Illinois, inventor Shrirang Jambhekar and his colleagues patented a smell device way back in 1997 as part of the company's ongoing research projects in biotechnology. Jambhekar says that Motorola's innovations could yield applications like biochips that can recognize problems by acting as an electronic nose. Meanwhile, mental health experts may capitalize on the devices to offer patients Proustian journeys through their youth, drawing on the connection between smell and memory.

ENTERTAINMENT

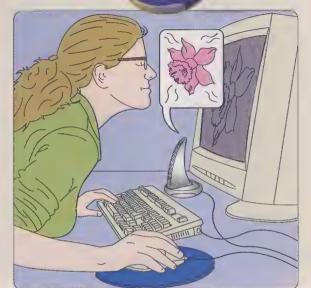
READ AND SNIFF

Think e-books are revolutionary? Wait till you get a whiff of the rest of the story. In February 1997, inventor Shrirang Jambhekar and his Motorola team created an olfactory PC card as part of a digital book project. "We wanted to create a holistic reading experience to allow an electronic book to smell like the pages of a physical book," he says. He adds that Motorola innovators want to create "immersive experiences," so that when you're reading a book, for example, you'll smell the story as you go along—a breakthrough for the Harlequin Romance line.

TELEVISION

GETTING TO NOSE YOU

Interactive TV will allow producers to convey not simply the look and sound of shows like Survivor circa 2003, but the smell of the remote island as well. Just as AOLTV lets you videochat with buddies, soon you'll be able to smell them with scent "camera" technology, which enables individuals to capture and reproduce transient aromas. Don't worry about offensive smells forced your way, though. The Weizmann Institute's chief mathemetician, David Harel, who is also a researcher for DigiScents, is developing methods to ensure the responsible conveyance of scents on the Web.



"Hi Melissa. What's new at the office?"



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Touch

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ILLUSTRATION BY DAVID BRINLEY

QUEEZE A LUMP OF CLAY AND THE CLAY almost seems to squeeze back, resisting at first and then squishing slowly between your fingers. Now think about it for a second: This simple act creates a complex sensory loop, one involving not only the varying pressure you apply but also the clay's grit, dampness, and

temperature, not to mention its pliability and heft.

In everyday life, such loops of feeling coil through us in such rapid succession that we take them for granted. They are, however, a crucial ingredient in what are known as "haptic interfaces"—mechanical or digital control mechanisms that relay tactile sensations between the toucher and the touched. Gamers know the technology in the form of force-feedback joysticks, which let players experience more immediately the turbulence of a flight simulator or the recoil of a shoot-'em-up machine gun. But that, as they say, is only the beginning. Though still in their infancy, haptic interfaces have the capacity to let us feel things we've never felt, in places we've never been—from the bottom of the ocean to the inside of a virus. The foundation for this is already in place—and it's coming to your computer very soon.

Of course, when most people think about a tactile Internet, they think about sex. But contrary to what you may have heard, that's not what the immediate future of touch online is about. Sure, the online sex industry is a billion-dollar business, but for now virtual sex remains a pretty unexciting affair. There will probably come a time when exchanging embraces with our remote part-

we have no idea where we will end up." Dennerlein himself recently ended up swaying 100 feet above the sea on an oil rig. From this lofty perch, he used a haptic-enabled controller to maneuver underwater robots, a job that will soon be possible over the Web.

So how will we gather the information needed to drive this touchyfeely technology? Partly through the feedback loop of product release and customer reaction. "We have finally solved the chicken-and-the-egg problem," says Dr. Louis Rosenberg, the 31-year-old CEO of IMMERSION CORP. in San Jose, California. Immersion's Touch-Sense software turns the Web into the digital equivalent of the bottom of a boat: Textures attach themselves like a barnacles to the standard elements of existing pages. (One thing you don't have to worry about finding on a Web page: slime. "You'd need a cold temperature for 'slimy,'" Dr. Rosenberg says, "and we're not there yet.")

As touch technology becomes ubiquitous, Dr. Rosenberg believes, Web designers will add the sensation of touch in much the same way that they already add sound and animation. Indeed, Dr. Rosenberg is confident that the whole nature of the Web is going to change. Sitting in Immersion's headquarters, I can feel what he means. For one thing, I am weightless, planted in one of those \$800 black-mesh office chairs; for another, I'm fighting with my joystick. Every time I swat a ball on the screen, I feel it "hit" my paddle. And the harder I swing my stick, the faster the ball goes to the other side. Someday, you'll be able to play tennis with a partner in Timbuktu, or golf with your buddy from Tashkent on a course in virtual Scotland. Maybe, too, you'll be able to use a barbell-shaped peripheral for a Web-

'Adding touch is the first major step forward in the computer interface since the mouse and the graphic interface'

ners or robotic cybersweeties feels right; for now, stimulating your significant other via such "cyberdildonic" devices as Vivid Entertainment's cybersex suit seems more ironic than erotic.

In the meantime, a Disneyland of sensations will soon be available through your computer mouse. The passive little critter you've been using is practically extinct; your next mouse will vibrate, push, and pull with a will of its own. This fall, **LOGITECH** introduced the iFeel MouseMan, a \$40 pointing device that makes hyperlinks vibrate slightly, Web page buttons feel a little sticky, and moved on-screen objects seem as if you were dragging them across sandpaper. This may not sound like much, but it's the beginning of a revolution in how we interact with our computers.

A touch-enabled Web will allow us to use our brains differently. These days, when you navigate cyberspace, you most often study a menu of text choices, make a rational decision, and click—logical, left-brain behavior all the way. But what if you were reading something and your mouse "fell" into a "hole" that you couldn't see? You might actually explore the unknown; you'd start having a more intuitive, right-brain experience. And you might, it turns out, actually get more work done, faster.

Jack Tigh Dennerlein, who teaches in the Ergonomics Program at Harvard, clocked productivity increases of 25 percent to 50 percent on certain tasks using "sticky" or magnetic-feeling targets for clicking and dragging. "Adding touch is the first major step forward in the computer interface since the mouse and the graphic interface were introduced in the early '80s," says Dr. Dennerlein. "And

based workout with Oprah's personal trainer—who will tutor you and other virtuous souls by adjusting the resistance of your "weights" and offering encouragement.

Immersion has also developed something it calls the Virtual Laparoscopic Interface, which lets doctors hone their surgical technique using a computer rather than a cadaver. "You can learn what it feels like to insert a needle in a spinal cord," says Dr. Rosenberg. The device—modeled on the tools used for endoscopic surgery—is enabling medical students to simulate operations online. Someday, surgeons in, say, Cleveland will be able to remotely perform surgery on patients half a world away. That's good news for people like the woman in Antarctica with breast cancer who last year had to wait months before she could leave the polar base for a biopsy.

But we are already there when it comes to making and feeling three-dimensional objects on the Web. The only real obstacle for most people, in fact, is cost. For example, you can purchase from **SENSABLE TECHNOLOGIES**—for \$15,000, that is—the company's FreeForm software and a Phantom 3-D modeling "mouse" (more like an arm, really, or an upside-down dentist's drill). With your hand on the Phantom, you can explore something as mundane as a chocolate bar as though it were a moonscape. You're able to feel things you'd never imagine from merely looking (it's surprisingly hard to pull yourself out of the cracks between chocolate sections), and you can examine them in ways we've barely dreamed of (tunneling through the bar like a worm, for starters).

Bill Aulet, the president of SensAble, expects that in the next

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two to five years, the Phantom—or something like it—will become cheap enough for mass consumption. And when the Phantom comes to your desktop, it has the potential to change your relationship with your computer. "People don't think of the Phantom as a computer." Aulet says. "It's very natural and friendly." He foresees people using it to explore the inside of the Grand Canyon. perhaps, or to nudge satellites back into proper orbit, or to conduct experiments with electrons that could win the Nobel Prize.

Above all, it's likely that touch technology will encourage us to make new things. Just as desktop publishing turned everyone into a graphic designer and a publisher, tactile feedback will give us all the hope that we're junior Michelangelos. The concept of mass production will change, as well, as we gain the ability to design our own consumer goods and send those designs to digitally enabled producers. One-click shopping will become a thing of the past as you send 3-D models of your own feet to Adidas and then select the thickness of the upper, the stiffness of the arch, and the color of the laces for the running shoes of your dreams. You'll create a model of your own body and send it to your virtual tailor.

You'll think of new ways to send bits of yourself to those you love—e-mailing sensations that will bridge time and distance in ways that Hallmark never knew possible. You might, for instance. make a 3-D scan of your daughter's head and send it to her blind grandfather in Bombay, who will be able to run an electronic hand over her sleepy little head and caress her tiny ears. He will feel something—something as real as a photograph, and as unreal as a virtual model—that no one can feel today.

LISA MARGONELLI is a San Francisco-based writer who can't wait till the day she can use her computer with her right brain.

FLASH FORWARD>>WHAT'S NEXT FOR...

MEDICINE

A REMOTE BEDSIDE MANNER

Your bum knee keeping you at home more lately? If you can afford a sophisticated surgical simulator and software—at nearly \$20.000 you can practice such operations as arthroscopic knee surgery and balloon angioplasty right at home. Within the next five years, other steps toward online health care will emerge. A surgeon at the Mayo Clinic in Minnesota, for instance, will be able to operate on a patient in Alaska without feeling jet-lagged. The most promising development that's around the corner: A group in Italy is working on a prototype that connects a patient to the Web and, using force-feedback technology, delivers highly controlled physical therapy throughout the day.

ENTERTAINMENT

MOUSE BITES DOG

Coming to a screen near you: more "reality" in entertainment, from games to movies. For now, it's limited to the rocking sensation you get when you're playing a video game with an amped-up joystick. For a hands-on sense of "moving feelies," try using Logitech's WingMan mouse on Macro-

media's demo site, IMMERSION [immersion.com], which features a little cartoon dog wearing rocket packs. Grab the dog with the mouse and feel the thrust of the rocket under your fingers, without having to walk behind him with a scooper and a virtual newspaper.

EDUCATION

TO THE MOON

Touch-feedback technology is already changing classrooms, as witnessed by THE NANOMANIPULATOR [www.cs.unc.edu/research/ nano] project. Using the Phantom, a very precise force-feedback pen, students in a North Carolina high school were able to interact with-and even

change-adenovirus particles by manipulating molecules under an atomic force microscope miles away. But that's only the beginning: Through virtual space, real space (like outer space) can become more real. As early as five years from now, schoolchildren will be able to interact with things that for now are abstract concepts, such as virtually "feeling" the pull of gravity on the moon instead of just processing the equation that describes it.

COMPUTING

BRAVE NEW WEB

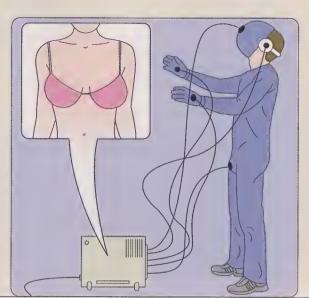
The big story: increased access for the blind, hearing-impaired, and mobility-impaired. The Web is currently a hostile place for those without good hand-eye coordination. Touch-enabled setups are already helping older people become Web proficient, while computer scientists at the University of Glasgow are designing computer environments for the blind using speech, audio, 3-D sound, force-feedback, and Braille.

SEX

THE BODY ELECTRIC

Pornography is driving Web technology as much as any scientific

discipline. To get a feel of the burgeoning field of "cyberdildonics"in which your mouse manipulates your partner's sex toy from wherever he or she is logged on-go to SAFESEXPLUS [safesexplus.com]. (Its slogan: "The Internet never felt so good.") For diddlers of a different stripe, try Vivid DVD's CYBERSUIT [cybersexsuit.com]. The suit, which you put on and then plug into your computer, is loaded with sensors that you and your virtual playmate stimulate with a click of the mouse. This may or may not be what you consider "sex," but it's definitely safe...that is, as long as you don't get electrocuted or lose your grip on reality.





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Taste

My name is cyberspace, and I'll be your waiter today. Our specials are...



ILLUSTRATION BY BRAD HOLLAND

HERE'S A GREAT MOMENT IN THE MATRIX WHEN the traitorous character Cypher spears a chunk of virtual T-bone on his virtual fork, chewing and savoring it as a smile spreads over his face. "I know this steak doesn't exist," he declares. "I know that when I put it in my mouth, the Matrix is telling my brain that this is juicy and delicious. After nine years, you know what I realize? Ignorance is bliss."

The profusion of hardware crowding our desktops—window-rattling subwoofers, vibrating joysticks, monitors displaying DVDs in cinematic proportions—suggests that the Matrix is what the Net wants to be when it grows up: a hedonistic eye-candy store proffering delights for all five senses. Devices and applications catering specifically to our organs of taste, however, are lagging far behind. In the *real* virtual world, surround-sound sizzle is turning out to be a lot easier to serve up than simulated steak.

A Savannah, Georgia—based startup called **TRISENX** aims to change that with what the company calls taste-enabled Web sites. "Imagine that you see a picture of a chocolate-swirl cheesecake online. With our device, you'll be able to click on the icon and taste the cheesecake before deciding whether or not to buy it," TriSenx marketing director Kathey Porter says.

It's a tantalizing scenario. You take virtual nibbles out of competing brands of chocolate-chip cookies before deciding which box should hitch a ride on the next Webvan. First to come calling on

just taste sour. While single notes, like red or cold, are sufficient to register a distinct impression in the realms of the other senses, taste is always a symphony. Ivey knows this, and his device also impregnates the potato starch with characteristic mouthwatering smells, he says.

But until we're willing to jack USB cables directly into our brains, or TriSenx markets the equivalent of *Star Trek's* food replicator on the *U.S.S. Enterprise*—"Earl Grey, hot!"—there's still that little wafer to chew on. Food chemists know that 2-methylbutyl 2-methylbutyrate tastes something like Champagne, but aren't the tongue-tickling bubbles the point?

Many of the rituals we've developed around the enjoyment of food aim to ramp up the input of factors *other* than signals from our taste buds. No one's busy developing quieter Jiffy Pop or sandwich spread that tastes like caviar. Shrink-wrapped sushi from the corner salad bar is singularly unsatisfying because the little mouthfuls of protein and carbohydrate have been stripped of an environment designed to focus awareness on the sparkling appearance of impeccably fresh fish. Want to taste virtual filet mignon? Try eating steak in a narrow airplane seat. In comparison, any burger cooked on a crackling, smoky backyard grill tastes like heaven.

Although Ivey says confidently that "the technical pieces are all in place," TriSenx has pushed back the on-sale date for its Senx-machine from last spring to sometime in the next year. "It's market-readiness that's the factor here," Ivey insists, implying that his

It's a tantalizing scenario. You take virtual nibbles out of competing brands of chocolate-chip cookies before deciding which box should hitch a ride on the next Webvan

TriSenx: the vendors of adult entertainment, equipped with their own ideas of what spicy delicacies Web surfers might want to sample before purchase.

Here's how it works. First TriSenx analyzes edibles in a lab in order to break down the tastes of dishes into essential components. Once the proper mixture of base flavors in each dish is determined, coded representations of these blends are added to a central TriSenx database. When you click on an icon, the code to replicate the taste of that product is sent from the database to your desktop tasting device, called a Senxmachine, which inventor Ellwood Ivey compares to a desk-jet printer. Like a printer painting a complex portrait out of primary colors of ink, the TriSenx device deposits the proper blend of flavors onto an edible wafer made of potato starch. *Voilà!*

The notion that tastes can be broken down into what Ivey calls "primaries" has a basis in biology. Scientists tell us that our taste buds can discern permutations of only four basic qualities: sweet, sour, salty, and bitter. Much of our delight in what we eat, however, comes from a harmonization of other senses, particularly the sense of smell.

The earthy sweetness in just-baked bread is partly the scent of alcohols produced by the yeast, rising into our nostrils in the steam from the freshly cut loaf. Without the aromatic oils that permeate the air when you break open an orange, the fruit would

potential clientele just hasn't caught up yet with the idea of tasteenabled surfing.

Maybe it's not that difficult to comprehend why surfers aren't champing at the bit to scarf down room-temperature wafers garnished with eau de bœuf. One of the most pervasive legacies of the social revolutions of the last century is a surging interest in foods that taste like themselves, in wholesome dishes prepared with locally farmed ingredients: bakery baguettes, heirloom tomatoes, artisan-made cheeses, chickens that didn't spend their brief time on Earth plumping up in a cage. As the rest of our lives seem to be getting more virtual, the things we like to eat are getting more real.

Unless we do all of our shopping at the farmer's market, however, many of the foods that we buy are enhanced by the same sorts of additives that TriSenx wants to spray on its wafers. Even vitamins from the health-food store are made more palatable with flavoring agents, essential oils, and extracts furnished by "flavor houses" like Taste-Maker and International Flavors & Fragrances. It's to the needs of this specialized industry that Richard Heinze, who trains professional "flavorists" for a living as the founder and president of Flavor Knowledge Systems, wants to cater with his Web site, **Sensorynet.com**.

A database at SensoryNet allows a food manufacturer or flavorist to dial up a particular taste—say, butterscotch—and retrieve

a list of natural or synthetic agents that will reproduce, mimic, or enhance that particular taste. (If you ever wondered how to make bologna out of a sow's ear, think oil of coriander, garlic, onion, nutmeg, and white pepper.) Soon, Heinze hopes to offer samples from the flavor houses at his Web site.

But Heinze is skeptical about the notion that we'll be downloading standardized flavors with a click anytime soon. Flavoring agents are notoriously variable, he cautions. Orange oil produced by one country, at one time of year, will taste quite different from the product of another time and place. That's what keeps professional flavorists in business: mixing, matching, smelling, and tasting. "It's not just a science, it's an art," Heinze says, admitting that the industry has been "trying to perfect butter flavor for 100 years, but [the results] all taste like margarine."

Still, technological innovations like gas chromatography have resulted in strawberry and peach flavorings that taste a lot more like fruit than they did 50 years ago. But in matters of taste, a healthy measure of skepticism feels right. Taste is the most intimate of the senses, unfolding inside us. Flavors can't be held at a distance while experiencing them, like unsettling news footage or a song blasting from a nearby radio. As at the Last Supper, taste is communion.

U.S. Patent No. 6,053,738, for Ivey's "sensualizer," describes a much more ambitious invention than the one promoted on the TriSenx site. It's an immersive environment that also produces smells, textures, and even simulated weather. In other words, it's a little Matrix. Until Ivey gets it just right, though, I'll continue to believe that lobster tastes best eaten on the deck of a beach house on Cape Cod, while hearing the waters from which it came splashing on the sand, in a moment when sight, sound, touch, smell, and taste commingle to produce a single, perfect sensation.

STEVE SILBERMAN is a contributing editor at *Wired* and the former restaurant critic at *San Francisco* magazine.

FLASH FORWARD>>WHAT'S NEXT FOR...

SHOPPING

I SURFED IT ON THE GRAPEVINE

"No one knows what a litchi nut tastes or smells like," says Lisa Shea, the wine expert for ABOUT [about.com], explaining that novices are often unfamiliar with the basic aromas or flavors that define fine wines. But when she gets a prototype of the iSmell device, expected to be released in mid- to late 200I, and couples it with the prototype of TriSenx's tasting device, Shea will employ both of the new technologies to educate budding oenophiles. Tom Heller, vice president of business development at EVINEYARD [evineyard.com], pre-

dicts that the addition of taste and smell to wine-related Web sites will boost wine sales. Now if someone could take care of that little problem of shipping booze across state lines.

DINING

VIRTUAL SMORGASBORD

One day "taste machines" will be in every restaurant, predicts Ellwood Ivey, founder of TriSenx (see above), the first firm to claim development of a tastesynthesis device. At your favorite TriSenx-enabled Web eatery, according to Ivey's vision, you'll be able to sample the flavors that define the soup du jour as you peruse the menu, or taste the take-out fare before you place your order. By July 2001, SensoryNet's Richard Heinze expects to make chemicals available to food-processing companies. If an ice-cream manufacturer, for instance, wants a new coconut raspberry flavor, it'll use SENSORYNET.COM to select the chemical ingredients that match those flavors and have the chemicals sent through standard mail for onsite testing and tasting.

FOOD

TUTTI-FRUTTI

If you love unusual fruits and flavorful organic vegetables, farmers' increasing use of the Internet may be something to chew on. The Net enables near-instantaneous assessment and consolidation of consumer demand, meaning that farmers can find out if 25 people in San Francisco will spring for a juicy but pricey new variety of corn, or if there are a total of 1,000 buyers—spread across the country—for a new flavor of goat cheese. The Internet, in this way, aids and

abets the ARK OF TASTE AND SLOW FOOD PRAESIDIA

[www.slowfood.com/activities/ark/presidia.html] project in its stated goals: "To discover, catalogue, review and promulgate forgotten flavours and threatened treasures: a whole universe of cured meats, cheeses, cereals, vegetables, local breeds, which owe their particularity and organoleptic excellence to situations of isolation." We'll have what they're having, for sure.

SEX

A HEADY WHIFF

As the first to realize profit from the Net, cyberporn purveyors' adult sites see even more dollars ahead in a Web that is evolving into a true extension of the body. TriSenx has already received inquiries from porn reps, who are eager to incorporate the firm's taste-replication technology so as to allow users to "taste" sensual foods (think strawberries dipped in warm chocolate) as they peruse stimulating visuals. Expect adult sites such as Danni's Hard Drive to be early adopters, whetting sexual appetites with a bite of forbidden fruit.



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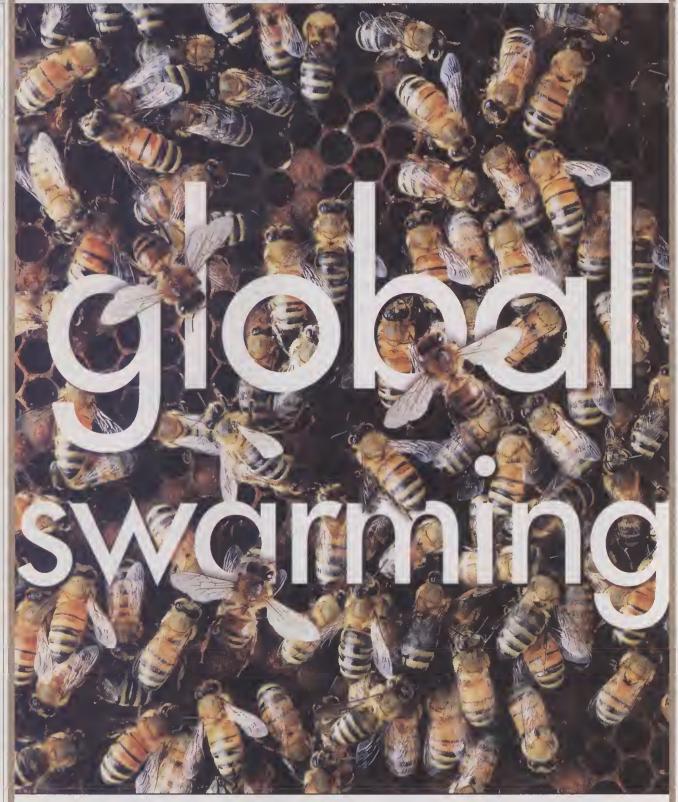
TRANK HERBERTS DITTE

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There's a grand, unifying idea that links it all together—our music downloads, our searches for Jennifer Aniston, the cure for cancer. It's at the very heart of the Net. And it has the power to change the world

BY CHARLES C. MANN

N JULY 3, 1839, FRANÇOIS ARAGO, THE DIRECTOR of the Paris Observatory, addressed the French parliament. What he said of course did not directly concern Jennifer Aniston, the *Friends* star, who wouldn't be born for another century and a half. Nor was he contemplating cancer research, needlepoint patterns, or punk bands like the Offspring. Still less was he treating the future of the Internet. But Arago's speech had implications for all of these people and things.

His subject was a new technology that had become the talk of the Continent. Revealed a few months before, this technology was widely believed to be on the verge of revolutionizing society. Pundits claimed that it would overturn every established aesthetic doctrine, destroy the livelihood of thousands of portrait painters, and even promote godlessness. The new technology was photography.

To Arago's delight, the photograph's inventor, Louis-Jacques-Mandé Daguerre, had given him an early glimpse of his creation. Now the physicist was explaining it to the Chamber of Deputies. He intended to ask the government to acquire the patents from Daguerre and release the photographic process freely to humankind. (Ultimately, the French did just that, with one entirely understandable exception: They made the English pay for licenses.) But before Arago could persuade the deputies to buy the patents, he had to explain to legislators why photography was important.

Forget about this business of making better imitations of nature than painting could, Arago in effect said. Forget about the talk of replacing painting altogether. Forget even about what Daguerre himself said his invention—Arago called it an "instrument"—was going to do. What the inventors of a new instrument expect of it, Arago declared, "always turns out to be a trifle compared with the succession of subsequent discoveries of which the instrument was the origin." In other words, what might be called Arago's Law of Technological Development asserts that a new invention exerts its greatest impact not by changing, improving, or replacing old things but by generating things that are entirely new.

Arago's Law certainly held true for photography. As the critic Walter Benjamin famously argued, photography's true impact was not to be measured in terms of the number of portrait painters who lost their jobs (alot of them later became photographers, anyway). Instead, Benjamin said, photography became a key component of the "age of mechanical reproduction"—the era in which millions of copies of pictures and texts and sounds can be shot around the world. Together with other, contemporaneous inventions like the high-speed printing press and the telegraph, the photograph led directly to the creation of mass media—movies, television, this magazine—an enormously important phenomenon that was never envisioned in Arago's time.

The Internet, I submit, is following a parallel course. Initially it was created with a simple goal in mind: linking up the large, expensive mainframe computers prevalent in the 1960s. Back then, as Katie Hafner and Matthew Lyon point out in their history of the Internet, Where Wizards Stay Up Late (Simon & Schuster, 1996), working collaboratively was something of an ordeal: "Every new project required setting up a new and costly computing operation....If the scientists doing graphics in Salt Lake City wanted to use the programs developed by the people at Lincoln Lab [at MIT], they had to fly to Boston." Because researchers couldn't keep traipsing around the country, it made sense to let

them send information to their colleagues' computers—and to do so in the most reliable way possible. "That was the whole purpose of the Net," says Padgett Peterson, a networking pioneer who is now at Lockheed Martin. "Deliver the mail, no matter what. Send those packets of data, no matter what. That's all—deliver the mail."

And deliver the mail the Net does. E-mail is an obvious example, but so are instant messaging, buying goods through e-commerce, upgrading software with downloads, and the whole panoply of activities performed today on the Web. Though these phenomena might seem disparate to us mouse clickers, all of them involve one computer sending or receiving a discrete package of zeroes and ones (a letter, so to speak) to or from another computer via a middleman computer called a "server" (a kind of digital post office, which routes messages to their rightful recipients). But if Arago's Law is right, delivering the mail—as useful and important as that is—will turn out to be a trifle compared with what's coming next.

And what is that? Nobody can be certain about the future. But it is increasingly believed that a big hint about the shape of tomorrow was provided last March by two young men named Justin Frankel and Tom Pepper. What they did might be described as removing the post office from mail delivery. In fact, it could be described as overturning the whole notion of *mail*. Instead of creating a system that temporarily links two computers through a server, Frankel and Pepper invented a method of linking together many computers without a central server—and of keeping them connected all the time. The big servers at the central nodes of the Internet have always been in this kind of 24/7 contact. But what Frankel and Pepper figured out was a way to link together thousands of ordinary people in a perpetual digital swarm.

The term *swarm*, redolent of insects and hives, may give you the willies. It shouldn't. Today the principal means by which people buy goods and get information is to visit some central location: a store, a library, a Web site. When people are linked without interruption, they will get more of what they want from one another—that is, from the other folks in the swarm. Think of an 18th-century village, its inhabitants constantly talking among themselves, borrowing tools, and exchanging favors as they work and play. The wonder of networking technology is that the 21st-century swarm could be just as close-knit and sociable as its predecessor, but contain billions of people.

IF YOU ARE ONE OF THE MILLIONS OF AMERICANS WHO LISten to music on their computers, chances are good that you use a free program called Winamp. The most popular player for PCs, Winamp was developed largely by Justin Frankel, a tall, rambunctious redhead from Sedona, Arizona. In a classic Internet rags-to-riches story, Frankel dropped out of college and set up a tiny company to sell Winamp; that business was quickly bought by the much larger America Online. The price: about \$80 million in stock.

By all accounts, Frankel was not greatly changed by earning millions of dollars before he could legally drink. He and his programming buddy, Tom Pepper, still enjoyed going to parties, jumping in people's swimming pools, and driving around fast in the desert. They also still liked listening to music, which is one reason they quickly cottoned to the file-sharing program NAPSTER.

As young Internet buffs, Frankel and Pepperknew about Napster well before the company that grew up around it was sued to a



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frazzle by the record labels. In those days, the chief problem facing the service was the volley of complaints from university information-technology managers, who groused that heavy Napster use was clogging up campus computer networks. Some angry university administrators had gone so far as to block access to the service.

Frankel and Pepper came up with a program that would skirt this threat—a "clever hack," in Net parlance. They called their software **GNUTELLA.** in a joking nod to both the GNU free-software project and their beloved gooey Italian hazelnut spread. When Frankel and Pepper released an unfinished version on March 14, the unexpectedly huge demand forced them to shut down their Web site with-

in hours. America Onlinewhich intends to merge with Time Warner, owner of one of the world's biggest record labels-was aghast to find that two AOL employees were facilitating the unauthorized exchange of music files. That same day, the company yanked what it described as an "unauthorized freelance project." Ever after, the company has kept Gnutella's inventors in what one journalist has facetiously called "the online witness-protection program." But it is difficult to keep secrets in the digital community. Their ideas are out in the world, and hordes of programmers are working to develop them.

Frankel and Pepper intended Gnutella simply as a super-Napster: a tool to let students trade music files that would be hard for administrators to shut down. But just as Arago's Law would

predict, Gnutella's inventors apparently had no inkling, at least at first, of the real import of their creation. Indeed, a growing number of programmers, e-businesspeople, and Internet experts believe that it will help to transform the coming century as much as the photograph helped to transform the one just ended.

When people launch the Napster application (or software from an imitator), it scans their hard drives for music files, creates lists of these files, and zaps the lists to the big central computers—the servers—at Napster world headquarters in Redwood City, California. By taking in all the individual lists, the hub machines accumulate a master list of available music files on all the computers connected to Napster at that moment. To search for a song, Napster user Alice types a request into the Napster software on her PC to find tracks by Prince, say, or Duke Ellington. The program shoots the request to the servers at Napster HQ, which check the master list of music files. If the master list shows that users Bob and Carl have "1999" or "Take the 'A' Train," this information is sent back to Alice, who can then download the songs directly from Bob or Carl.

Universities—or record-company lawyers—can block Napster (and its many imitators) because all requests for information go to a single, central location: Napster HQ. If the electronic highway to Napster HO is blocked, the service can no longer be used.

Gnutella is different. Like Napster, Gnutella creates a list of the available files on the user's hard drive. But unlike Napster, it does not send that list to a master computer. There is no central computer, no master list, no Gnutella world headquarters, Instead, Gnutella users send out their requests ("Do you have Prince or Duke songs?") to the computers of their nearest neighbors in the Gnutella network, which check through their individual file lists. If these machines have the desired files ("1999," "Take the 'A' Train"), they send a thumbs-up message ("Download here!") back to the original computer. Meanwhile, they pass on the request to their

neighbors in the network, who check their file lists, and so on. in a cascade of searches and responses that ends only when the user gets tired of searching.

Napster thus is like a wagon wheel: a central computer at the hub, the users' computers at the rim. Gnutella, by contrast, is more like a swarm of mayflies —at any one time, any one member of the cloud can be in proximity to any other member. Because Frankel and Pepper designed the Gnutella network to have no center, the only way to stop it is to block every single machine in the pullulating mob, which is close to impossible.

Gnutella was (and is) unfinished, slow, crash-prone, and hard to use. Nonetheless, it created enormous and immediate excitement, "As soon as I heard about Gnutella, I jumped in," says Gene Kan, CEO of a Gnutella-inspired startup so new it

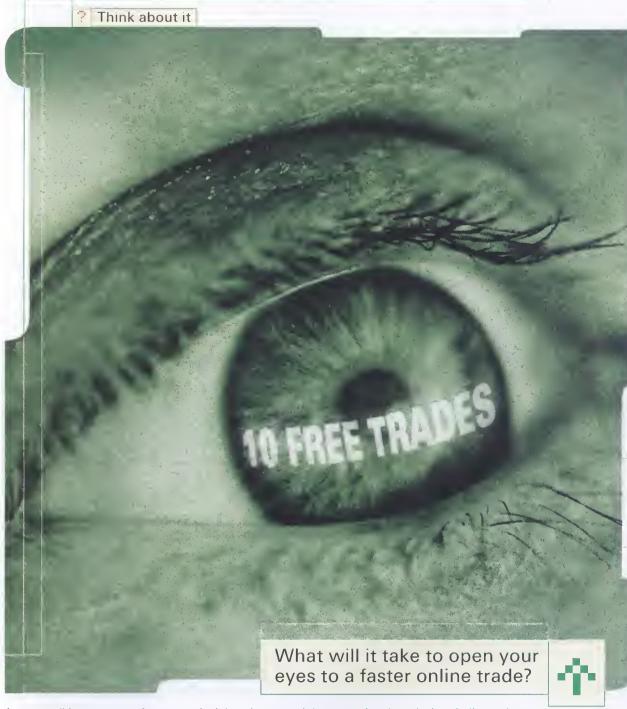
does not yet have a permanent name. "It was going to be much more than music-much, much more." A standard Web connection is static: Your PC grabs a copy of a file and displays it. The mail is delivered, the connection ends; that's it. But the Gnutella network cloud is *dynamic*: Users are constantly connected to and updating one another, even if they are thousands of miles apart. And the dynamicism lets users communicate in a whole host of novel ways.

Within days of Gnutella's appearance, Kan and other coders were developing new versions of the software. Within weeks, there was talk of startups and venture capital. Kan's company was backed by, among others, Netscape cofounder Marc Andreessen and some of the founders of Excite@Home, the broadband company. The Gnutella frenzy spawned breathless media coverage, excited conferences, corporate hype, and hopes for initial public offerings. Gnutella-like services were awarded their own jargony name: peer-to-peer, or p2p. "Peer-to-peer is what we think is possibly the next computing frontier," said Patrick Gelsinger, vice president and chief technology officer of the Intel Architecture Group, in August.

The first application of peer-to-peer is the most obvious: to transform search engines and directories like AltaVista, Yahoo!, and



LET'S BE FRIENDS: Using services like Upoc, network "swarms" will be able to track even the movements of such celebrities as Jennifer Aniston.



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Google. As every Internaut knows, the bane of these sites is the broken link—the URL that no longer functions, because its name or content has changed since the search engine looked at it. Gnutella-type searches, by contrast, show only those links that are actually present at that moment. **POINTERA**, a startup in Mountain View, California, released its Gnutella-like search engine in June; in Europe, a consortium of programmers has promised to deliver an even more powerful version, called gPulp, next year.

The prospect of better searches alone is enough to excite Web surfers. But the real potential of the network swarm, Kan believes, lies elsewhere. "The search engines are good," he says. "And we intend to exploit them. But what will really make a difference is when the [computers in the network] move from simply knowing what's on each other's hard drives to working together. When we have hundreds of thousands or millions of computers and PDAs and network devices working with each other 24 hours a day—now, that will be interesting."

LAST SUMMER I VISITED A FRIEND IN NEW YORK CITY. MY friend is a businesswoman but has many talents unrelated to her career, among them the ability to spot celebrities from hundreds of feet away. When we walk around Manhattan, it is quite common for her to clutch my sleeve and hiss into my ear that so-and-so is climbing into a cab or walking a dog or sitting in a

propinguity that is a variant of the mayfly swarm of Gnutella.

Text-messaging services are enormously popular in Europe, although they are used mainly to send messages to individuals, rather than among groups. Such services are more difficult to set up in this country, because U.S. cell phones and networks use a variety of incompatible standards. Like the old Macintoshes that could not read PC disks, phones designed to use one standard can't readily send a message to phones designed for another standard. Because the Upoc system does not depend on any particular cell-phone standard, it should work with any brand and over any network.

Jennifer Aniston (if indeed it was she) disappeared down Columbus and, apparently, out of sight of Upoc. At the time, the celebrity-spotting group was just two months old and had but 200 members. Spread thinly across the city, they usually nabbed only one or two famous people every day. But my friend was confident that the number would soon soar—a belief shared by Upoc and its backers.

"The buzz about the Net has always been content," says Gregory Clayman, a Upoc cofounder and marketing VP. "Time Warnerspends millions of dollars to show you something at Pathfinder.com....But what has actually grown the Internet is the notion of communities—people communicating with and working with other people. E-mail, Napster, Gnutella, IM [instant messaging]—those are the things that have really driven the Net." He adds, "You aggregate people together, and you do it more and more, and all kinds

When people are linked without interruption, they will get more and more of what they want from one another—that is, from the swarm

restaurant with an entourage. On this day we were at a table outside a café on the Upper West Side. Her cell phone went off just after we ordered coffee. She looked at the little LED screen and said, "Jennifer Aniston is at Barnes & Noble."

"What?"
"Shhh!"

The bookstore was two blocks away. My friend kept craning her head to peer at it. Eventually a young blond woman came out the door. "Bingo," my friend whispered. Mirabile dictu, the sitcom star walked down our street. My friend and I pretended we were not staring at her. I didn't recognize her, but then I never do. When the woman turned the corner, my friend punched a message into her cell phone. "Jennifer's going down Columbus Avenue," she typed.

My friend was a product tester for **UPOC**, a company that lets groups of people send short messages to one another on cell phones—a kind of wireless chatroom. *Upoc* is an acronym for "universal point of contact." The company wants to transform cell phones from devices that link two people for discrete conversations into devices that link many people all the time in a constant flow. Ultimately, Upoc wants to support hundreds of wireless communities: Nasdaq watchers, sports-league participants, dog-club members, fans of particular bands or styles of music, coalitions of commuters interested in traffic information. Like neighbors gossiping over fences, the members of these communities will constantly be zapping messages to one another in a cloud of digital

of extraordinary things happen."

In Clayman's scenario, the wireless swarms will buzz round the clock, with people dropping in and out to leave messages, ask questions, and work out problems. Joined from cell phones, cars, and public kiosks, the constant back-and-forth will not be restricted to desktop boxes. Everyone will belong to dozens of overlapping electronic neighborhoods—big and small, trivial and important—checking into them and departing many times a day. Some will be small and private: families, groups of friends staying in touch, people working together on a project. "I have a group of friends I go out with on weekends," Clayman says. "I can ask them all where they'll be at eight o'clock or just say, 'Hey, guys, I'm staying home tonight.'"

Other peer-to-peer communities will be public and much larger: groups of people temporarily banding together to get a volume discount on appliances, cars, or consumer goods. Early, imperfect examples of this attempt to harness communal energy for shopping include MERCATA and MOBSHOP, which sell items at low prices if enough people agree to buy them. Another example is the group of microcommunities that have sprung up by the dozen around EBAY. But now imagine these static Web sites reinvented as network clouds. In an electronic version of the Zagat guides, people could pop into restaurant communities to see what diners thought about the eatery around the corner; communities of good Samaritans could call for designated drivers, request help for shut-ins, relay information about traffic problems. Are you trying to fix your car

on the road? Call the Ford Taurus community from your handheld. Hev, anyone out there know where they put the jack on these cars? Already, needlepoint patterns are being traded by fans in a textile version of Napster. Can a needlepoint swarm be far behind?

Internauts have been carrying on a crude version of this electronic conversation since 1979, when Usenet was invented. Usenet consists of thousands of chaotic electronic bulletin boards with names like ALT.MUSIC.OFFSPRING (for fans of the group), on which people exchange messages and files. The swarm will be faster and easier to use—and bigger. Usenet groups typically have a few hundred members. But the swarms can contain millions. Napster and something called IMESH were founded at roughly the same time and offered essentially the same service, but Napster became much better for music fans (and a much greater irritant to record labels) because it had many more members. If an obscure band came into the news, people could always find it on Napster. And after a while every Napster user—or Gnutella user, for that matter—grew familiar with the way a song could seem to appear out of nowhere and suddenly become ubiquitous. Such large electronic communities facilitate word-of-mouth on a global scale.

Members of the media know that the most important and trusted means of communication is word-of-mouth. People go to movies and concerts or read books and magazines because their friends recommend them. To stimulate electronic word-of-mouth, this past swarm. Swarm members might have to pay a little extra to hear it first. After that, fans could pass on the best tunes to their friends zapping them to their cell phones, which will be equipped with earphones. Or to their cars, which will have Net connections. The friends will get a free listen or two before the billing software kicks in. If a song is a hit, people will keep passing it on. Hey, check this one out. The tune will fly out of the cloud of Offspring fans and suddenly be all over the global swarm, distributed for free without radio or record stores or rave reviews in Rolling Stone. Meanwhile, Radiohead will be releasing music to its fans, who will pass it on if they like it, and Star Wars XIII will be zapped first to its fans, and nonagenarian Stephen King will be sending out scary stuff to his fans....

These perpetual clouds of communication will alter daily life in ways we are just beginning to appreciate. People will have to develop ways of controlling the flow. New chapters will appear in etiquette books; new customs will evolve for dealing with the swarms. Yet the biggest change will come not from the communities' talking together but from their pitching in to do things together.

MY COMPUTER IS CURING CANCER. SOON, I HOPE, IT WILL help to end global warming.

Not long ago I downloaded Frontier software from PARABON COM-PUTATION, a small firm in Fairfax, Virginia. Frontier runs unobtrusively on my computer, doing next to nil, until I walk away from

These perpetual clouds of communication will alter daily life in ways we are just beginning to appreciate. People will have to develop ways of controlling the flow

September the Offspring decided to release an entire album on the Internet two months before it appeared in stores. The band's single, "Pretty Fly (for a White Guy)," is one of the most widely downloaded tracks on the Net—one reason, the Offspring believe, that the band has sold more than 26 million compact discs. By letting fans pass around tracks from the new album on the Net, the band hoped to harness the swarm. The band's label, Columbia Records, was appalled. Locked in a legal battle with Napster and other filesharing services, it was not about to let one of its bands deliberately release free music onto the Net, even if the band thought it would ultimately be more profitable. By threatening to sue the group, it stopped the plan. But sooner or later something like it will happen.

In the future, when most people get their music from computers, the Offspring may release their music wholly online, perhaps accompanied by software that bills listeners a cent or two every time they play a song. (Music, in this scenario, would become a pay-asyou-go service, like long-distance phone use. But people could also pay a few dollars per month and get all the music they want, which would turn music into a subscription service, like cable TV. The details don't matter; there are many ways to let musicians get paid.)

The band would put it out to their fan community: the Offspring

the machine. It waits a decent interval—14 minutes—to ensure that I'm not coming back for a while. Then it works on curing cancer.

The National Cancer Institute wants to simulate the interaction of potential chemotherapy drugs and cancer cells. Because such simulations involve three-dimensional modeling of complicated protein molecules, they require massive amounts of computing power—amounts that are far beyond the capacity of the NCI itself. To help out, Parabon takes advantage of one of the world's great underdeveloped resources: the millions of computers that uselessly hum the night away on people's desktops. The company slices the NCI model into tiny pieces and sends the pieces to tens of thousands of idle computers around the world. When computer users step away for lunch, their machines take in information from Parabon, analyze it, and beam it back. The company stitches together the pieces and sends the result to the NCI.

Parabon is far from alone. The RUTHERFORD APPLETON LABO-RATORY, a British national facility, is gathering computer volunteers to run a huge experiment that will test models of climate change. (I'm signed up and waiting.) In San Francisco, a startup named POPULAR POWER is simulating the action of influenza vaccines with a model that several thousand people are running in

FOOTNOTE: 1"Wait a minute," you may be saying. "I thought the Pentagon created the Net because it wanted its communications systems to survive enemy attack!" This is only partly true. In 1961, a tiny group of wackos bombed microwave relay stations in Utah, disrupting telephone service. Alarmed, the military commissioned a big study from RAND, the California think tank, a year later. The authors proposed a schema much like today's Internet, but didn't provide suggestions about how one would actually build it. Nonetheless, the study was influential. It helped to persuade the military to keep funding the development of the Internet. And the project engineers, who wanted to link computers anyway, borrowed some of its ideas.

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their spare time—or, rather, their computers' spare time. **SETI@HOME**, a consortium based in Berkeley and sponsored by upward of a dozen corporations, has enlisted 2.3 million people to analyze radio-telescope data for extraterrestrial signals. The Great Internet Mersenne Prime Search (GIMPS), run by a San Diego company called **ENTROPIA**, identified the largest known prime number with the shared resources of more than 50,000 people. More than 2 million digits long, the prime was discovered, according to Entropia, by a computational effort equivalent to running a personal computer for 4,000 years.

Parabon doesn't make money from its cancer work. To pay the bills, it intends to do number-crunching for big companies. When that money comes in, it intends to pay me for my computer's share of the work. Exactly how is unknown—Parabon hasn't worked out its payment scheme yet. But the company believes that its biggest revenue source will be huge computer models. Like the NCI, pharmaceutical companies will want to model the precise way that drug molecules interact with cells. Aeronautics, automotive, and financial companies will also need giant pools of processing power.

It's fun to call up a calculation from the Parabon Web site to see how much work my computer has done. But what I'm looking forward to most is something I heard about recently when a pharmaceutical company gave me a tour of its impeccably maintained laboratories. After the tour, one of the researchers gave me a cup of coffee. We fell into conversation. I asked what current research finding had most excited him. The scientist made me promise not to mention his name or the company's name. Then he leaned over the table and said, "Gnutella."

It was becoming clear, he said, that the slight individual variations in people's genetic makeup played a key role in determining the effectiveness of drugs—and whether they will cause side effects. Ideally, doctors should be able to examine their patients' DNA before prescribing treatments. But they would need staggering amounts of computer power to predict the actions of a drug from an individual's genetic information; so much power, in fact, that it seemed unlikely that doctors could ever afford it. But that power was available, the researcher said. It was sitting there uselessly in all the computers in empty offices on the other side of the globe. By distributing the computation à la Gnutella by giving it to the swarm—doctors and patients could get help from people across the world in determining the best treatments. "No company would run the analysis software," the researcher said. "That would assure its impartiality. The software would be like the Internet itself—bits and pieces of it everywhere and nowhere."

One of the first attempts to turn such imaginings into reality is **MOJO NATION**, founded by Autonomous Zone Industries, a Silicon Valley startup with a dozen employees and a development team that is jokingly called Evil Geniuses for a Better Tomorrow, Inc. Users join the company-sponsored virtual community by contributing "resources" in the form of disk space, bandwidth, or CPU cycles. In return for these resources, they receive a special barter-like e-currency called Mojo, which they can use to upload, store, and pass along information. Much like the exchanged favors that ruled life in 18th-century villages, Mojo will let people acquire things and information from other members, or can be converted to actual dollars. Whereas old-time villagers simply kept track of such transactions in their heads, the accounting and bargaining for the citizens of Mojo Nation will be handled by invisible programs that lurk in the back-

ground. According to the company, an initial version of the software should be out by the time you read this.

Other floating clouds of software are easy to imagine. To get advice, people could track their own behavior—"I belong to these communities," "I passed along these pieces of music," "I've bought this over the Net"—and submit it to computer models built with data from thousands or millions of other people. Like sophisticated versions of the suggestions at Amazon.com ("Customers who bought this book also bought…"), the models would tell what people like yourself did when they needed to buy a refrigerator, rent a house, or choose a school for their children. "The potential for the community to help you is incredible," Upoc's Clayman says.

The risks are enormous, too. The more time we spend in the network cloud, the more of ourselves it will contain. Consider Jennifer Aniston. On the one hand, the thought of fans following her every stride is kind of creepy. On the other hand, none of the people in the celebrity-spotting swarm means any harm—it's as if the actress has her own personal neighborhood watch. Similar tradeoffs apply to a gene-software swarm. The thought of putting your genetic code out in the world is scary. But at the same time, the potential for more-effective drugs is enticing.

Usenet likewise suggests potential pitfalls, as does Gnutella. Some Usenet groups are wonderful sources of advice and comfort. But others are swamps of junk e-mail and inane name-calling. Already, clever but unpleasant pornographers are trying to jam Gnutella with their wares, making sure that every request for "Pretty Fly (for a White Guy)" is answered by at least one invitation to visit a dirty-picture Web site. And technical experts believe that Gnutella swarms can expand only to a certain size—perhaps 100,000 members, for now—before they are overwhelmed by their own traffic. For technical and social reasons, it seems, some digital neighborhoods can't survive if they grow too large. But the engineers and programmers who are thronging the newly convened conferences on peer-to-peer computing think these problems can be solved.

Arago's Law applies. Because we're just at the beginning of the swarm, we're all going to participate collectively in its invention. As a result, we are the last people to predict what life will be like when almost everyone can be in constant contact with almost everyone else. Paradoxically, the world will seem both larger and smaller. We'll be in more contact with more people than ever before, but may feel more exposed to the bad eggs among them. "There's always been a fear of malicious gossip in communities," Clayman says. "But people still love to gather in groups anyway. I think the movement [toward a global swarm] is unstoppable. When you get right down to it, people just love to do stuff with other people."

Americans have long been inspired by Jefferson's vision of democracy—the inhabitants of a small town gathering together for the common good. By pooling the wisdom of the group, Jefferson believed, the whole could become much greater than the fallible beings who form its parts. The new technology promises something very much like this vision on a global scale. If millions of people around the world are included in a global conversation, there is a real possibility of expanding the reach of humankind in ways that could surprise and delight us for decades to come.

CHARLES C. MANN is the author of @Large: The Strange Case of the World's Biggest Internet Invasion (*Touchstone Books, 1998*), and is a correspondent for The Atlantic Monthly and Science.

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HOME

magine, if you will, that you live in a 12-story bachelor pad of the future. It has the requisite rotating king-size bed, a helicopter pad on its rooftop, and a wet bar that can disappear into the wall. But it also has a highly intelligent "brain"—a network of

computers, video panels, and wiring—that manages every aspect of the building, from its heating and cooling to the jets in the spa's Jacuzzi. Some might say this living and thinking home is the stuff of adolescent James Bond fantasies. The truth is, homes like this exist today.

According to Keith Rich, the CEO of ISR, an Illinois-based company that designs and installs the control systems for such homes, the technology has been around for nearly a decade. For the most part, only homeowners with unmanageably large estates hire ISR to automate their residences—the reason being that it's not easy living in and operating a home that has hundreds of light switches, thermostats, and audio and video buttons, as well as computer-activated waterfalls.

Of course, you don't have to live on a

sprawling estate to want home automation. But you do need loads of money to get it. ISR clients pay anywhere from \$350,000 to \$2 million to turn their ordinary dwelling into a "smart home." Cheaper technologies exist, of course, that would allow you to create simple local area networks at home—but affordable automation won't reach the masses until 2006 or later. Rich says.

That doesn't mean you can't dream about owning a wired house. What will it look like? That'll be up to you. Each automated home is designed

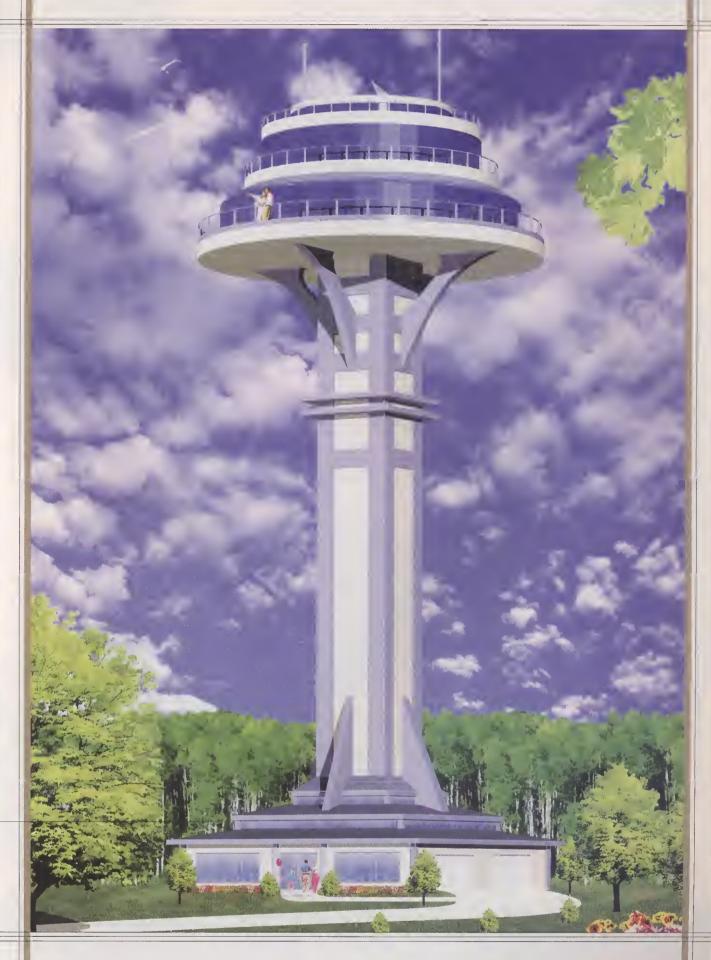
to cater to the owner's desires and idiosyncrasies. In the pages that follow, we've assembled photos of some of the world's most intelligent and ogle-worthy abodes, with explanations on the way they work, and why. Feel free to draw inspiration. And keep dreaming.

HIGH LIFE

THE MYER HOME

Inspired by The Jetsons. architect Fritz Myer's futuristic SKYHOME [www. skypadtech.com] is a proposal for a panoramic tower, equipped with a T-I line to the Net, state-of-the-art home automation, and swishing Star Trek-like doors. Who would ever want to live in a place resembling a miniature airport control tower? "People who want scenic views," says Myer. "People who are comfortable with the new technology lifestyle."

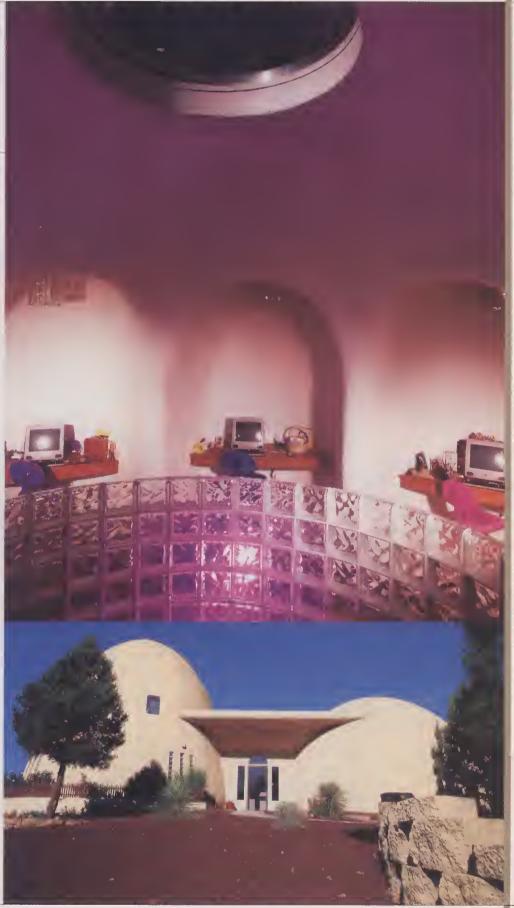
BY ROB BERNSTEIN



THE SUPER DOME

THE CHERRY HOME

Located on the outskirts of Sedona, Arizona, Bracken Cherry's estate looks like a Tatooine village straight out of Star Wars. Nine connected domes house the family business (an online B2B directory called OnLineNow). along with the living quarters and an ultrawired schoolroom for Cherry's three kids: Now Joy, Star Joy. and lam Jov. Each of the children, who range in age from five to 10, has an iMac, a T-1 connection to the Net, and a scooter for doing laps around the house. The tykes also enjoy access to the many repositories of technology that are scattered throughout the domes, including PC laptops with high-speed access to the Web, networked printers and scanners, and three high-speed servers. Concerned about electromagnetic waves emanating from all that technology. Cherry has placed inside his dome home four "etherie copper pyramids," which are said to emit positive and neutralizing energy fields.



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THE JONES HOME

This Carmel, Indiana, home is so complex that it requires its own full-time IT engineer. That's not surprising, since every aspect of the 50-room dwelling, which is owned by Escient Technologies chairman and CEO Scott Jones, is fully automated from the 40inch plasma screen in the billiards room to the fireplace in the master bedroom. Everpresent Panja LCD touch act as the interface to the house's high-speed network. LAN jacks can be found in nearly every room. But the mansion's crowning jewel is its \$1 million theater. The screening room has 20 seats, with ports in each row for plugging in laptops: Jones had them installed pany presentations and streaming Internet media onto the theater's 16-by-9foot screen. "But my kids also use the theater for largerthan-life Web surfing and multiplayer video gaming." admits Jones. "It's all part of our living laboratory, which we call home."





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CASTLE IN THE SKY

THE GARRIOTT HOME

Richard Garriott's home is his castle. In fact, it really is a castle. The pleasure palace. which is currently under construction in Austin, Texas. has a portcullis, a dungeon. and a host of secret pasmany modern amenities, including high-speed Internet access, plasma screens, and a peculiar mechanical bed that moves up and down the castle tower. Garriott, the mastermind behind the pop-Online, hired ISR to install the castle's high-speed network. will control everything from the planetarium lights to the urally, it will be accessible by laptop or phone. That way Garriott can close the drawbridge, even when he's away from home.



HOUSE CALLS

THE BUTCHER HOME

If there's one thing that Jon Butcher, CEO of Precious Moments, loves about his Chicagoland home, it's that he's never far from it. "Even if I'm in Paris, I can log in and open the garage door for my eats," he says. "And if I'm on my way back from the city, I can instruct my home to greet me with music and spurting waterfalls." The home runs on Microsoft Windows NT software, and hidden touch panels (inset) control every aspect of the house, from the pool to the high-speed Net connection. Butcher is considering automating the home's aromatherapy system so he can log in and release any of 100 scents through the





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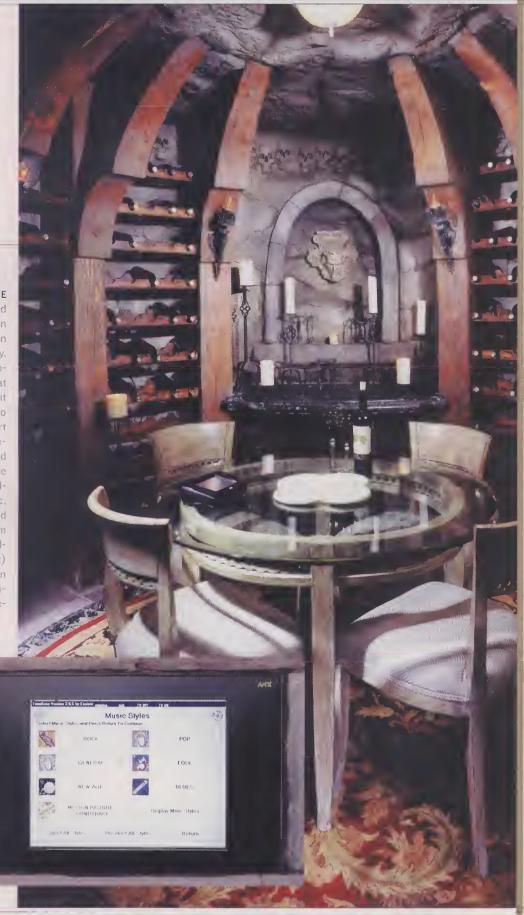


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BIG AUDIO DYNAMITE

THE ANONYMOUS HOME

It took an entire year and cost upward of \$1.7 million to complete automation work on this Orange County. California, residence. Audio-Visions, the company that handled the project, says it paid particular attention to the home's state-of-the-art sound system. The homeowner, who requested anonymity, wanted to be able to access his extensive collection of digital music. including MP3 files and Internet radio streams, from any room in his house. Hidden touch screens (inset) were installed in more than a dozen walls of the residence, even in the climatecontrolled wine cellar.



new screaming machines are hitting the streets of San Francisco and London. Not to mention the buildings, fountains and shopping malls. The only rule in this race is: There aren't any rules.





www.microsoft.com/games/midtown2

2001 WHAT'S AHEAD ON THE WEB



AUTOMATIC FOR THE PEOPLE A Behind-the-Screens

MASTER SYSTEM The network gateway amounts to the brains of the home. It controls and connects just about every piece of electronic equipment in the house, from the phones to the sprinkler system. It's also the conduit for external delivery services, such as cable, satellite, and DSL or T-I

CONTROL PANELS Touch panels, wireless remotes, and keypads operate the

line connections.

home's many automated features. They are as easy to use as an ATM machine. A Panja remote, for instance (A), monitors and manages the lighting in the attic and the climatic conditions in the greenhouse. Touch panels can also be used to surf the Web and see who's standing at the back door.

EXTERNAL CONTROL The home gateway can be managed remotely through direct dial-up or by phone.

VOICE RECOGNITION

Instead of touch screens, some homeowners prefer voice recognition systems, which let you bark commands at your house. The technology is in its infancy, and is primarily used by people with disabilities.

ENTERTAINMENT RACK All audio and video equipment is squirreled away in entertainment racks, including MP3 servers, DVD players, and high-capacity CDstorage units. The resulting

media center connects to the control system and is accessible via LCD touch panels that are installed throughout the home.

MULTIMEDIA Every TV in the house is wired to the main control system and can be used to browse the Net or access data stored on the network server.

HARD WIRING Coaxial cable and CAT5 communication wiring insure reliable, high-bandwidth

transmission of data throughout the house. Fiber optic lines leading out to the Net will become more common in the next few years, though they're unnecessary for internal home networking.

KITCHEN APPLIANCES An intelligent "microwave bank" from NCR's Knowledge Lab not only downloads recipe instructions from the Web but also lets you shop and bank online. A coffeemaker from Thalia





Look at How Home Networks Work BY MITCHELL KLEIN

(B) is designed to communicate with your bedroom alarm clock so your morning joe starts brewing the moment you wake up. And a Netenabled refrigerator from Whirlpool gives you inventory updates. Someday such a fridge will even have the technology to send grocery orders to the local food mart.

WIRELESS ACCESS A wireless home network enables you to surf the Net from any laptop in or near the home. A Sony DCR-TRVII digital camcorder can communicate wirelessly with the home server, automatically storing images on the family PCs. The Sunbeam Thalia Hand-Helper wireless PDA (C) can also operate on this network, allowing family members to sync up and share schedules.

CLEANING APPLIANCES The Probotics cordless vacuum cleaner with the Cye-SR robot (D) roams the house in search of dirt. It can be programmed using your home PC. An Italian-designed washing machine

from Merloni connects to the Net, so you can start your laundry from anywhere in the world. Also, Ford and Maytag have teamed up to create the concept of an ultrawired minivan (E). It comes equipped with a media center, washer and dryer, and two fridges.

OUTDOOR ENTERTAINMENT

The intelligent barbecue grill of the future will announce when the steak is ready while outdoor speakers play tunes from the entertainment rack's MP3 server.

VISIT MODERN GREECE



... you on vacation.

ANCIENT GREECE



...you playing Zeus.

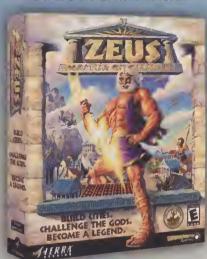
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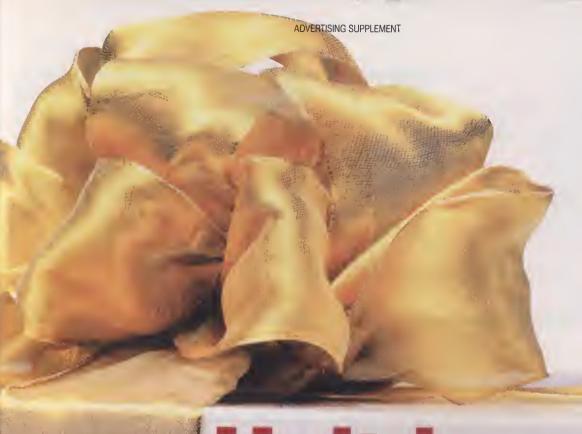
to enter and for all the contest details







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On-line only





GIFT EXCHANGE The Net was supposed to simplify holiday shopping, and it has: no more battling

consumer gridlock in crowded stores. But the volume of merchandise available online can be overwhelming. Need a Santa's helper? We've handpicked the Web's top gift shops for everyone on your list, from your epicurean uncle to your rad snowboarding niece. Start checking 'em off on PAGE 184.

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ESSENTIALS: Festive Foods,

New, Notable & Fun

WHAT'S HOT-AND WHAT'S COOL-ON THE WEB THIS MONTH

BY LISA KO

RELAUNCH

EYADA.COM The talk-show network adds another channel to its belt: Health, Fitness & Adventure. Tune in here for more than 220 hours of live talk per week with pros like sex therapist Dr. Ruth Westheimer, marathon legend Grete Waitz, and Fitness for Dummies author Liz Neporent. [eyada.com]

MGM.COM Hollywood's legendary Metro Goldwyn Mayer studio moves into the 21st century with a redesigned site. See trailers, buy DVDs, and learn screenwriting and filmmaking at MGM University. You'll even catch the famed roaring lion in action. [mgm.com]

ALLRECIPES.COM Hungry? One of the Net's largest cookbooks has

partnered with online grocery store WEBVAN [webvan.com]. Browse thousands of recipes, plan your meals, and then order and receive the ingredients you need—all without leaving the comfort of your home. [allrecipes.com]

MISC./NEAT

SOUNDS OF THE WORLD'S ANIMALS "Animals make much the same sounds around the world, but each language expresses them differently." From ciu ciu crr (Albanian bird chirps) to nöff (Swedish pig oinks), this fascinating tour reveals linguistic and cultural differences—and similarities—within the global zoo. [georgetown.edu/cball/animals/animals.html]

YAMAHA: A FULL LINEUP OF FUN PAPER CRAFT Can't afford to buy that snazzy Sports YZF-RI cycle yet? You can make it yourself, kind of. The Japanese manufacturer's detailed instructions on crafting drag racers, motorcycle accessories, and gorillas(?) out of paper give the art of origami a new spin. [www. yamaha-motor.co.jp/papercraft/index-e.html]

THE VANISHING TATTOO Body artist Thomas Lockhart embarks on a quest to uncover the "last authentic tribal tattoo." Hop along on his travels to Russia, New Zealand, and Borneo to document elderly practitioners of the art. [vanishingtattoo.com]

SENIORS

WISECITY The first portal for "FreeAgers"—empty nesters with the freedom to enjoy their golden years to the hilt—provides the over-

PORTAL PATROL

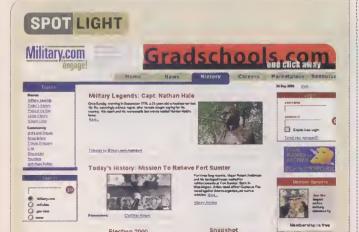
In the market for different digs? An enriched version of YAHOO! REAL ESTATE [realestate.yahoo. com], the product of the portal's teaming up with property brokerage center HOMEGAIN [homegain.com], boasts an Agent Finder service that can ease the buying and selling processes.

AOL.COM [aol.com] has whipped out its latest version right in time for the holidays. AOL 6.0 sports a customizable Welcome Screen, streaming media devices, instant messaging upgrades, and a cyberwallet to facilitate all that gift shopping you're doing.

Disney never quite made an, um, go of its Go Networks as a gateway to its sprawling entertainment empire. So the company redesigned **GO.COM** as a lean, mean searching machine, heavy on useful tools and light on glitz. But the portal hasn't completely abandoned its roots. Check **STUDIO.GO.COM** for movie trailers, music clips, and more from various Disneyowned properties.

50 set with a revamped Net outlook. In addition to the usual portal fare, sections such as Moneywise, Travelwise, Healthwise, Bookwise, and Shopwise make a great case for the wisdom of elders. [wisecity.com]

IGRANDPARENTS.COM Some folks prefer feathering an empty nest with the next generation—



Military Service Providers

AN YOU BE ALL THAT YOU CAN BE ONLINE? A RECENT UPRISING of sites catering to the armed-forces community has taken the Net by storm. Whether their allegiance is to the Army, Navy, Marine Corps, Coast Guard, or Air Force, active service personnel, reservists, and vets can engage at MILITARY.COM, a portal packed with reference guides, articles, and community tools. The Ross Perot—backed SALUTE.COM offers members shopping and health coverage discounts, while CENTRALHQ.COM has spawned a network of pages including ARMYHQ [armyhq.com], MARINESHQ [marineshq.com], and NAVYHQ [navyhq.com]. For family-oriented info, drop by MAINGATE.COM. And former personnel can swap stories and search for lost friends at GIBUDDIES.COM.

BASE CAMPS: Armed-forces personnel have many homes on the Net.

MISSING LINK? SITES WE SUGGEST YOU SAMPLE TOGETHER





Breaking Up and Making Up

OTHING DEMONSTRATED THE WICKED excesses of the '80s better than PTL (Praise the Lord), the first Christian televangelism empire. Aiming to broadcast "24 hours a day until the Second Coming," hosts Jim and Tammy Fave Bakker embezzled millions from their viewers until a fall from grace: the couple's conviction, subsequent bankruptcy, and divorce.

A recovered and remarried Tammy Fave is now marketing her way back into the limelight at TAMMYFAYE.COM, where she sells a line of bath products. Surprisingly (or perhaps not), the former conservative Christian's biggest fans are drag queens, who share her penchant for raccoon eyeliner, false evelashes, and heavy mascara. Her recent documentary, The Eyes of Tammy Fave, was narrated by none other than RuPaul, mainstream media's most popular queen. The 6-foot-7-inch performer's cosmetics tips on THE OFFICIAL RUPAUL WEBSITE [rupaul.net] (currently undergoing a makeover to be unveiled in the new year) are worthy of Tammy Faye herself—and RuPaul was once quoted as saying, "I think the whole world should wear makeup." Work it, girls.

HOUSES OF PANCAKE: RuPaul (left) and Tammy Fave Bakker prove the eyes have it on their home pages.

even if they live hundreds of miles away. Created by two grandparents, this resource offers a forum for seniors to meet and chat, and lets them connect with the rug rats via online photo albums and care packages. [igrandparents.com]

KIDS

NEOPETS Remember Tamagotchis? Virtual pets may have a short shelf life, but these critters are determined to stick around. Build your own Nimmo, JubJub, or Grarrl, then set up house in Neopia, a thriving community where your pet can interact with more than 3 million of its peers. [neopets.com]

ARTABUNGA! Imagine a cooler version of the classic, clunky Etch A Sketch and you've got one of the many tools here that enable kids to exercise their creative streak. With chances to win prizes for drawing a picture or writing a poem or story, they won't even notice that pesky "learning" part. [artabunga.com]

IMAGES EDDIE BREEN'S PIGGYBACK

ART Spiffing up yard-sale paintings with flying demons and flaming nuns, this self-taught "piggyback" artist has even peddled his wares on eBay to become an underground Web celeb. Take a stroll through his gallery, which features such works as Circus Priests Juggle Crosses! and The Early Worm Catches the

THE GREAT BUILDINGS **COLLECTION** Dunsmuir Flats?

Bird! [www.eddiebreen.com]

Château de Versailles? The Flatiron Building? From obscure historical structures to awe-inspiring tourist magnets, this catalog of more than 800 greats serves up a database of building photos, architectural styles and histories, and even measurements. [greatbuildings.com]

SPORTS

SPORTSSLEUTH.COM

Enter up to five favorite sports teams-college and pro football, hockey, college and pro basketball, baseball—and receive a daily personalized e-mail from the sleuthmaster containing reports, game recaps and scores, injury reports, and postings from popular message boards. Easier

than clicking that remote control! [sportssleuth.com]

SPORTS AUCTION Think a smaller, friendlier eBay solely for snorts fanatics, with baseball cards, autographed halls, hats, and other team memorabilia up for the bidding, at a buck and over. Use the AutoNotify service to locate a specific item; the site's staffers will do their best to track it down. [sportsauction.com]

MAGS & ZINES

POPPOLITICS COM How does Neil LaBute's film Nurse Betty reflect our commodified lives? What do we mean by work in America? How deeply is pro football connected to masculinity and sexuality? Former C-SPAN reporter Christine Cupaiuolo founded this smart, edgy zine to examine the ways that popular culture and politics reflect, as well as shape, each other. [poppolitics.com]

HEROINE Songstress Joan Osborne (below) promises to "rock the world of women's webzines" with her latest venture, and it looks as if she's making good on that promise. Instead of beauty and fashion tips, look for interviews with female artists and activists like rapper Mary J. Blige, actress Susan Sarandon, and photographer Mary Ellen Mark. [heroinemagazine.com]



TREND SPOTTING BY BILGE EBIRI



It's Hip to Be Square

Entertainment dot-coms are embracing old-media formats

T SEEMS LIKE ONLY YESTERDAY THAT PUNDITS proclaimed the death of old media. Now, almost every new-media company that hasn't already folded or laid off half its workforce is scrambling to strike a deal with the entertainment world's equivalent of the brick-and-mortar store. IFILM [ifilm.com] has signed on to produce shows for the Independent Film Channel (television—is that thing still around?); INSIDE [inside.com] is launching a weekly print magazine with The Industry Standard. And **MEDIATRIP.COM** is selling videos of its popular short George Lucas in Love at Tower Records and Sam Goody. Granted, ATOMFILMS [atomfilms. com] has been hawking video compilations of its online material for some time, but what once seemed like an inability to say good-bye to an outdated format now seems downright visionary.

What's going on? After the embarrassing non-launch of the much-ballyhooed Pop.com, the sordid debacle that was Digital Entertainment Network (DEN), and the collapse of pioneer **PSEUDO** [pseudo.com]—not to mention troubling

RIGHT: Dr. Seuss let the Cat in the Hat loose.

layoffs at **SHOCKWAVE.COM**—sites may be looking for safety in the comforting arms of old media. "The market isn't ready for pure-play online entertainment," explains Peter Clemente, vice president of media and entertainment practice at Cyber Dialogue, which analyzes tech companies. "The Web is not a displacement medium; it's a parallel medium, and it works best in conjunction with other media." There's nothing new about this equation, adds IFilm cofounder and CEO Kevin Wendle. "The successful businesses have always been editorial brands that live beyond any one medium." he observes.

So can we expect to see MP3.com launch its own magazine or Mr. Showbiz produce TV shows anytime soon? "Anybody who wants to be smart has to think about using all the different media available," says Wendle. "Any new business has to figure out where to reach its customers."

QUICK CLICKS: NFL.COM has added auctions, a fantasy league, and UNDER THE HELMET [nfluth. com], a new home page for its popular TV show....Tired of the usual MTV fare? VMATIONS [vmations.com] showcases Flash animation videos from Korn, Nine Inch Nails, and other artists.

POP ICONS

Dr. Seuss

HOME BASE Seussville

With The Grinch plotting against Christmas at the local multiplex (see Up & Coming, page 50), it's a fine time to explore the online universe of the mean one's creator: the late Theodor Geisel, better known as Dr. Seuss. This delightful official site offers a host of amusing activities for devotees of all ages. There are mazes to conquer, games to print out, a trivia contest-and, of course, a catalog from which you can order Dr. Seuss merchandise. Gerald McBoing Boing is back for the first time in almost 50 years! [randomhouse.com/seussville]

PORTRAIT OF THE ARTIST AS A YOUNG CAT

Cyber-Seuss The Cat in the Hat greets you at Cyber-Seuss, along with a quote from the author himself: "I like nonsense—it wakes up the brain cells." We love the collection of early Geisel writings aimed at adults, such as this snarky send-up of high society: "Mrs. Van Bleck / Of the Newport Van Blecks / Is so goddamn rich / She has goldplated sex." You'll also find seminal





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SEUSS SCIENTOLOGY

Nut in the Hat "So what is the difference between Dr. Seuss and L. Ron? / What led them down the separate paths they are on?" The deep thinkers from Fade to Black Comedy Magazine have discovered several similarities between the good doctor and science fiction writer L. Ron. Hubbard, the founder of Scientology. They were both born under the sign of Pisces. They both had a penchant for bizarrely named characters. Take the site's quiz to see if you can guess which author created "Teegeeack" and who spawned "Bloogs."

[fadetoblack.com/nutinthehat]

-PAMELA DES BARRES

MUSIC

Holiday Tunes

CHRISTMAS COMPILA-

TIONS Imix.com From Vic Damone crooning "Winter Wonderland" to the Five Chinese Brothers rockin' "Dept. Store Santa Claus Strike," Imix lets you stuff your stocking with classic and offbeat songs to create your own CD mix. Search for Christmas to window-shop, each tune costs 99 cents, and you can listen before you buy [www.imix.com]

FESTIVAL OF BYTES

Musicmaker.com This custom-CD site edges out the competition for winter's second-best-known holiday, with more than 100 Hanukkahappropriate songs to choose from in its special Gifts area. Some of it definitely is your grandmother's holiday music, with Fanny Brice and Eddie Cantor shtick among the legit liturgical tracks. But it's balanced out by a wealth of picks from the Klezmer Conservatory Band, one of the definitive revivalists of Eastern Europe's eccentric, festive klezmer genre [musicmaker.com]

SOUNDS OF KWANZAA

Amazon.com Released to great acclaim in 1999, The Kwanzaa Album by Women of the Calabasha trio of singing percussionists-is a joyous invocation of traditional music ranging from Zimbabwean mbira to Caribbean steel-drum calypso. That's just one of several



LADIES' MAN: L.A. Lakers star Kobe Bryant shows a softer side.

fine selections you'll find at Amazon when you search for Kwanzaa, the seven-day holiday celebrated by African-Americans [amazon.com]

TURN, TURN, TURN Paul Winter's World of Living Music: Solstice Judeo-Christian winter holidays can be traced back to pagan solstice festivals. To mark the occasion, Paul Winter, a crossover composer specializing in spirituality with substance, has made a modern tradition of all-star concerts. Tickets for this year's event, at New York City's Cathedral of St. John the Divine, can be purchased via the site, which also links to live recordings of previous performances. [www.livingmusic. com/solstice]

-ADAM STERNBERG McGOVERN

SPORTS

Basketball Players

KING OF THE WORLD

Shaquille O'Neal For sheer bravado, vou can't beat L.A. Lakers star center Shaquille O'Neal's entry into just about the only medium he hasn't previously mastered. Learn about his three(!) films, his commercials, and his sportswear line. Listen to clips from his fourth (!!) rap CD, on his T.W.IsM. Records (you guessed it: The World Is Mine). Oh, yeah, there's some basketball stuff, too,

such as college and pro stats, online chats with His Shagness, a forum, and, inevitably, a store. Don't miss Shag's Growth Chart ("It will amaze vou!"). Jack Nicholson's got this one bookmarked, for sure. [shaq.com]

RENAISSANCE MAN Kohe

Bryant: My Official Web Site This site for Shag's costar on Hollywood's home team shows that there's more to Bryant than his flashy court moves: He reviews children's books in Kobe's Reading Club and, in the My Favorites section, says how much he loved Cate Blanchett in Flizaheth, You can bear Bryant ran on several tracks and discover the origin of his name. [www.kobebryant.com]

BAD BOY RasheedWallace.

com A slick, hip-hop intro enhances the online home of the Portland Trail Blazers' scoring machine and incorrigible hothead. You can send "Sheed" e-mail, get info on his radio show, and check out his rap debut. Though the site provides no explanation for Wallace's on-court temper tantrums, it does offer the chance to buy his infamous Banned Headband. [rasheedwallace.com]

-EDWARD LOVETT

SPOT LIGHT

BY HEIDI LAFLECHE

Bah! Humbug!

SANTARCHY IN THE USA!

and parade in cities across the U.S. The Santarchist gang won't say where won i say where they'll be this yes

[santarchy.com]

DEADPOOL.ORG Mocking all that i



[deadpool.org]

DESPAIR, INC.

break [despair.com]

THE SCROOGE **BEFORE CHRIST-**

MAS Alan I have it inks there's a little Scrooge in each of us His take on the season: "The showy get showler, the stingy get stingler, the drink usy garuda y noudays [alharris com/holidays/ scrooge2.htm]



When disaster strikes it's still wise to trust NOAA.

You may never see rain for 40 days and 40 nights, but weather disasters happen in an instant. Before you run out and build an ark, consider an All Hazards Alert Radio from Oregon Scientific. Hurricanes. Tornadoes. Wildfires. Flash floods. These are all very real threats. Weather is a leading cause of destruction of property and loss of life.

Available in desktop and handheld models, all of our NOAA devices utilize the US

Emergency Alert System. Our units provide alerts and immediate information on impending disasters. Our S.A.M.E. models allow you to screen out broadcasts that don't affect your area - so you won't be awakened by false alarms.

Convenient and versatile, our early-warning products are also affordable. So affordable in fact, you should consider getting them by the pair. It worked for Noah.





VITAL SIGNS BY JOANNE CHEN



Chatroom Rules

Playing it safe in health-site forums

EALTH-SITE CHATS FREQUENTLY EXPLORE DEEPLY PERSONAL topics, and they often provide the only way for people to share their fears anonymously. Therefore, participants tend to be vulnerable. Desperately seeking help, they may divulge too much information—leading to spam, cyberstalking, or worse. Health chatrooms are also a great place for crafty salespeople to set up shop. "You never know for sure who you're talking to," noted the late John Renner, M.D., of the National Council for Reliable Health Information. "Patients raving about a drug could actually be doctors selling product."

What to do? Choose a user name that doesn't include any part of your real name, phone number, or Social Security number. Never divulge your physical location or e-mail address, even if someone seems friendly. And don't take suggestions from others as gospel. "Chatrooms offer emotional support or fresh perspectives, but not accuracy," says Stephen Barrett, M.D., of QUACKWATCH [quackwatch.com], which provides pointers for spotting questionable health sites. In chatroom exchanges, make sure there's a reliable source (such as a university study) for any information, and stay away from advicemongers who write things such as, "This is NOT a scam!!" If something intrigues you, run it by your doctor.

Although you need to be careful, you don't need to stop reaching out. "Entering a chatroom is like dating," says health-site analyst Claudine Singer of Jupiter Communications. "You'll meet fruitcakes, but most people are just looking for soul mates."

NUTRITION

Healthful Diets

CYBERDIETITIAN Phys.:

Nutrition Produced by Condé Nast, the publisher of such glossies as Self and Allure. Phys. offers customized diet advice and several selfassessment tools. Search the Food Encyclopedia to get the nutritional scoop on your favorite eats, or use the Dining-Out Decoder to make your next trip to a restaurant guiltfree. You also can find the latest research from the Tufts University School of Nutrition Science and Policy. [phys.com/b_nutrition/ 00home/home.html

HEART SMART Delicious Decisions Access heart-healthy

recipes, learn how to translate those baffling food labels, and find out which Step by Step diet plan is right for you at the nutrition branch of the American Heart Association, Click over to the main AHA page for an interactive tool that helps you gauge your risk for heart attack and stroke. [deliciousdecisions.org]

HEALTHY HERBIVORES

The Vegetarian Resource Group Just because it's meatfree doesn't mean it's healthful. This site, produced by Vegetarian Journal, addresses the dietary concerns of vegetarians and vegans with articles on iron, calcium, vitamin B12, and other important nutrients. Browse through mealplanning tips and recipes, and sign up to receive the group's free

NUTRITION NEWS

monthly newsletter. [vrg.org]

CNN.com: Diet & Fitness What do the latest studies say about the benefits of soy? Why are Americans getting fatter every year? You can find answers to such questions at this useful site. WebMD.com handles the Doctor Q&A, dispensing dietary advice, and the Mayo Clinic prescribes wholesome recipes. [cnn.com/health/diet.fitness]

~ALEXIS ADAMS

PATIENTS' RIGHTS

Medical Malpractice

LEGAL RESOURCES Florida Medical Malpractice Web Site: McCullough, Campbell & Lane: Summary of Medical Malpractice Law The Florida site is a model for the kind of cogent information that should one day be available to consumers in all 50 states: people from other parts of the country can jump-start their own searches by pursuing national links. The McCullough site was built as a service for insurance-claim examiners, but it also functions as a handy reference for ordinary citizens. [floridamalpractice.com]; [mcandl.com/introduction.html]

RISK REDUCTION The

Online Medical Malpractice Magazine The Florida-based Association for Responsible Medicine, founded by a coalition of medical-injury victims and their families, works to decrease the incidence of such injuries through education and political advocacy. Built around harrowing testimonials about doctor-induced nightmares.

the organization's Web site pro-



-FRANK GREEN



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:// WebGuide | HOLIDAY SHOPPING



MONEY MATTERS BY DEAN FOUST



Surviving the Holidays

Lots of shopping expected, but lots of shakeouts, too

OR MOST E-TAILERS. THE PAST TWO CHRISTMASES have been the equivalent of Who Wants to Be a Millionaire? With orders flooding in from Net shoppers, their biggest problem was fulfilling them all. But as the 2000 holidays approach, the mood among virtual stores is taking on the tone of a different TV show: Survivor.

Make no mistake—consumers will still be spending big on the Net. In fact, GartnerGroup, a leading technology consulting firm, predicts that U.S. shoppers will drop \$10.7 billion online in the final quarter of 2000—70 percent more

than in the same quarter last year. But with more and more brick-and-mortar retailers throwing their weight around on the Internet, pure e-tailers are concerned that there may not be enough pie to go around this yuletide season.

Indeed, the shakeout has already started. In recent months, a number of once fashionable online merchants like Toysmart.com, Boo.com, Reel.com, and Value America have closed up shop. And Rob Labatt, a Gartner analyst, predicts the shutdowns will accelerate when

the holidays are over, as e-tailers who didn't cut it throw in the towel. "This is a make-or-break year for e-tailers," warns Labatt, As a result, Web storefronts—desperate to show a profit—won't be as generous as they have been in the past. Most e-tailers are cutting back on special discounts and no longer offer free shipping on small orders.

But even such cost-cutting measures won't be enough to put many online merchants in the black. As the shakeout accelerates, look for virtual stores to strike partnerships that increase their chances of survival. Labatt expects to see more deals that "bring together old-line retailers who didn't 'get it' on the Internet with e-tailers who 'get it' but need the resources of a brick-and-mortar retailer." One example: The recent deal between AMAZON.COM and TOYSBUS. COM, which decided to combine their outlets to better compete against the likes of ETOYS.COM and KBKIDS.COM. By this time next year, many Web shopping sectors may look like your local mall, with a couple of dominant anchor stores looming over the competitive landscape.

SHOPPING

Deck the Halls

BUBBLE YOUR PLEA-

SURE Wireless Head to Family Fun at this online store for fans and friends of public radio; then click on Family Time. You'll find a big red box full of old-fashioned Noma Bubble-Lites to set a-percolatin' on your tree. The awestruck look on the little girl's wholesome '50s face on the box says, "Oooooh! All that nostalgia for \$25!" Don't blame us if you get sidetracked by the aluminum retro barware along the way. [wirelesstoo.com]

LIGHTEN UP XtremeXmas.

com Want to score big in your neighborhood's annual lighting contest? This

clever company will happily grant vour wish. Using customer sketches and ideas, it creates gigantic light-up displays, such as

the dazzling choo-choo commissioned by a model-train merchant for \$2,000. Not living quite that large? An 8-foot Xtreme Star can be yours for \$70, or snap up IO of them for \$500, if you really want to knock 'em dead. [xtremexmas.com]

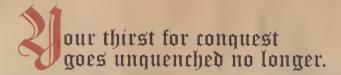
FRESH TO YOUR DOOR A

Christmas Tree Store & Nursery There'll be no more pine needles in your trunk or sap on your shoes if you get your annual evergreen here. Delivered fresh from an Oregon mountaintop, a 6- to 7-foot Noble Fir will set you back just \$80 if you live west of the Mississippi; add IO bucks for shipping if you're an Easterner. The same size Grand Fir, which is thicker and more fragrant, goes for \$70. You can get your wreath, tree preservative, stand, and disposal bag delivered at the same time. [christmastrees-r-us.com]

BEAUTIFUL FAKES Tree Classics If the sound of a tree falling in the forest isn't your

184 DECEMBER 2000

YAHOO! INTERNET LIFE











Five new civilizations to lead or conquer: Aztec, Mayan, Huns, Spanish, and Korean. Four new campaigns to emerge victorious: Attila the Hun, El Cid, Montezuma, and the Battles of the Conquerors. Your challenge: Expand your empire and rule the world. www.microsoft.com/games/conquerors









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with old-school video games. from classics for the Atari 2600 to titles created for such obscure platforms as the RCA Studio II. Need a quick fix for an old system? New controllers, joystick repair kits. and other helpful accessories are also on sale. [atari2600.com]

-PAUL SEMEL

Fabulous fakes from Tree Classics (prices vary by size)

idea of Christmas spirit, head here for a gorgeous array of faux firs. It'll cost you more, but your 71/2foot Arctic Spruce with "magnificent sculptured, round-ended, downswept branches" (\$188) will last a lifetime-and it will also be delivered to your door for free. [treeclassics.com]

INTERGALACTIC GREET-

INGS Holiday Cards Tired of sending the same old winter scenes? Novaspace offers a striking selection of otherworldly greeting cards. The I3 designs range from stunning to cute. One of our favorites features a mischievous alien, Bhen, sculpting a "snowbhen" on a Uranian moon. And the message attached to a Christmaswrapped planet Earth says it all: "Holiday greetings. Please handle with care." [novaspace.com/XMAS/ Xmas.html] -PAMELA DES BARRES



Games

START HERE ZDNet:

GameSpot: Gamers.com Zillions of sites track the latest releases, but ZDNet: GameSpot stands out by being so complete that it borders on the obsessive. Want to know whether Fear Effect 2 would make your brother's synapses fire faster? The site has an interview with the producer, a streaming video conversation with the designers, another video file of game footage, and-as if that weren't enough-a detailed preview. For reviews, head over to Gamers.com, which not only offers cogent assessments of its own but also compiles numerous online critiques of the same game from other reputable sites. [gamespot. com]; [gamers.com]

BUY HERE EBWorld.com:

Express.com Ready to shop? Hit EBWorld or Express.com for the best deals and the best service. It's a good idea to compare the two sites, since they seem to take turns offering the lowest prices. Both stock computer titles as well as console games, including some imports-though if you still need last-minute info before you buy, EBWorld has better descriptions, as well as reviews and screen shots. [ebworld.com]; [www.express.com]

GOLDEN OLDIES

Atari2600.com With PlaySta-

tion 2 besting the most advanced computers for speed and graphics capabilities, and similarly souped-up systems such as Nintendo's Dolphin and Microsoft's Xhox slated for release next year, the days of simple blips and bleeps are over. But if someone you love actually misses those little blotches of color, you've come to the right site. This exhaustive virtual garage sale is packed

Vintage Movado watch, Ashford.com (\$1,750).

Jewelry & Watches

BIG SPENDER Ashford.com

This elegant online showroom offers a luxurious selection of loose gems, fine jewelry, and designer watches with price tags to match. True, you can find pieces for under \$100 here, but the big-ticket items take center stage-like that stunning platinum and diamond bracelet from the Ashford Collection (\$12,500). or that stainless steel Cartier Panther watch specially priced at \$3,000. Use the Gift Center to steer vourself in the right direction. or search for elusive timepieces in the vintage watch collection. [ashford.com]

VINTAGE GLAMOUR

Fantasy Jewels A visit to Fantasy Jewels is as fascinating and surprising as rummaging through your grandmother's attic-minus the dust and spiders. From kitschy Bakelite brooches to funky gold-

tone fringe necklaces and flambovant rhinestone tiaras. the site offers a colorful selection of vintage costume jewelry at prices most of us can afford. Color photos, historical tidbits, and a secure server make shopping here easy, informative, and worry-free. [fantasyjewels.com]

BUDGET TIME-PIECES Wristwatch.com The Web

equivalent of the bargain basement bin, this no-frills site offers big savings on new and preowned watches and clocks. Searchable by manu-



ELECTRONICS

BUY.COM [buv.com]

Browse by brand, category, or manufacturer for hardware and accessories. Check the rebates page for great savings.

ETOWN.COM [etown.com]

Pros review merchandise and manufacturers. The Flashanimated Interactive Knowledge Bank helps you buy, use, and troubleshoot products.

800.COM [800.com]

The site's guides and discussion forums can help you choose from among the huge selection of products.

OUTPOST.COM [outpost.com]

Shop by brand or category and get free overnight delivery. Same-day delivery is also available in most areas for a standard fee.

AMAZON.COM

[amazon.com] Look for bargains in the Top Sellers category.



Live365.com

not your father's radio.

It's Big Brother'S!!!

*****Wake up, freedomloving citizens!!!****

It's a new dawn, the thought police are at the door and all they want you to do is visit a nice little web site called Live365.com. Just type in the URL and what at first seems a pleasant diversion is soon an all-consuming sonic passion. Your night, your day, Your wrong your right. And before you know it, you're hypnotized in front of your computer speakers for the umpteenth day in a row and little Joev and Jane America are pledging allegiance to the Iraqi flag. Resist temptation! Read on!





Darryl Jackson aka DJ Darryl

THE DOMIN-ATOR aka Rasta D THis unlicensed DJ's (Death Jockey!)

reggae show now has 100,000 desperate addicts. How many more must fall under his spell before we awaken from our slumber???





**this "curious" pattern appeared one morning in an Idaho cornfield. The handiwork of an overzealous farmer and his mower? Think again!!!!!!

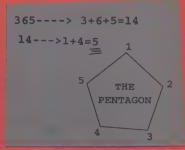


+**Ignore the following at your own peril ****:

"All you're gomma feel is good." Sure, the "tunes" seem good, the DJs seem good, it's all good. !!!!At FIRST!!! But then you're hook ed and the turntables turn. Just how "good" are you gonna feel when you have to move what's left of your belongings into a box car?!?

"I can quit listening any time I

Nail biting, slouching, "close" dancing -- these are things you can quit. Live365.com is not. Pretty soon, you'll be skipping work. Kids will be playing hooky. And who's that sitting in your barcalounger? Why it's Saddam Hussein!





Intelligence sources will "neither confirm nor dany" the so-called incideous insidious Brain-Devolution associated with repeated exposure to said "broadcasting' procedure(Live365.com.)

"Free music on the Internet is good."

That's just what the Trilateral Commission (aka the Illuminati aka the Bilderbergers) wants you to believe. Wake up, Nancy! Free music leads directly to Free Love. and next thing you know you're keeping time to the music with a big dose of the Clap!





Ukrong for America



Paid for by the citizens against live365.com

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RUDY PROJECT



facturer, activity, function, and material, Wristwatch.com sells timepieces from Swiss, Japanese, and American makers, including TAG Heuer, Swiss Army, Seiko, and Timex, at discounts of up to 80 percent. The site also offers online instruction manuals and warranties, easy access to customer service via e-mail and toll-free phone lines, and free shipping within all 50 states for orders of \$20 or more. [wristwatch.com]

CONVERSATION PIECES

Gisbert A. Joseph If you prefer a timepiece with a tale, don't miss this collection, Featuring vintage and "new, old stock" watches (unused, older pieces), the site stocks an eclectic inventory from TAG Heuer. Breitling, IWC, Omega, and other manufacturers. You'll also find colorful commentary on the history of many brands and a Spaceman Special link featuring watches designed by André Le Marquand, inspired by astronaut helmets from the late 1960s. [www.joseph-watches. -ALEXIS ADAMS

Slopes Gear

ONE-STOP SHOP GearDi-

rect.com Whether you're gunning for a new pair of Evolution U-2 Titanium skis, an all-terrain Charger Board, or just some boot heaters and a car rack, make GearDirect your first stop. Multiple departments offer everything from hats and helmets to instructional videos and kids' stuff. With Closeouts, Hot Deals Under \$100, and used equipment listings, you'll find bargains on big names like Rossignol and K2. And once you register a profile, you get an additional 5 percent discount. [geardirect.com]

CROSS-COUNTRY Nordic

Equipment Looking to surprise an XC skier with a holiday upgrade? This is the place to shop. Bargain Buys regularly discounts skis of all classes, from Fischer tour skis to Atomic racers, and you can get brand-new bindings, boots, and

Kneissel 360 skiboards from Skiboards.com (\$250).

Rudy Project racing shades from Nordic Equipment (\$115).

poles, too, And Nordic doesn't limit itself to winter gear: Buy some roller-skis for the off-season. [www.nordicequipment.com]

SNOWBOARDING Yahoo!

Shopping: Snowboarding No. single retailer hooks you up to snowboards like Yahoo! Shopping, which ties into 20 online inventories to make sure you find what you need, from Sno Zone leashes to the right kind of parka. And when you're trying to choose from among Rage, Oxygen Vibe, and Morrow boards, photos and descriptions make the choice easier. [shopping.yahoo.com/ sports and outdoors/individual sports/snowboarding]

SKIBOARDING Ski-

boards.com Skiboarding is the latest downhill twist, and this site is all you need to start schussing. After scanning product recommendations from savvy skiboarders, take advantage of Killer Deals like \$440 Kneissls at almost half off, Category and manufacturer searches help you comb through the 20-odd brand names for boards, bags, boots, and



helmets Only subscribers get discount info e-mailed, but everyone enjoys free U.S. shipping for purchases over \$200. [skiboards.com]

WINTER WEAR Altrec.

com: Snowsports By pairing skiattire sales with such advice as which fabric keeps you warmest. Altrec differentiates itself from the pack of online apparel retailers, You can get a bargain on an outer shell and a hot tip on the best neckwear. all in one place-just like when you actually go to a ski shop. [altrec. com/snowsports]-BRYAN VANDYKE

Collectibles

PLAY STATION House of

Tovs What would Barbie's measurements be if she were a real woman? How many feet of wire in the original Slinky? Learn vintagetoy trivia from "the amazing Mr. Bighead" as you roam the virtual aisles at House of Toys. Vancouver-based funmeister Chris Harms deals in battery-operated and windup toys. robots, and cars, as well as books and tin toy art. Most are from the '50s and '60s. Give your favorite kid a gift from the past or bring an adult's inner child giggling back to life. Toy prices (in U.S. dollars, shipping included) range from \$175 to \$850, with most falling in the \$300 to \$500 range. Santas, start your charge cards. [houseoftoys.com]

TRASHY TREASURES

Kitschy Koo Collectibles Sharon Potts celebrates the quirky style of everyday things from the '20s through the '70s. Marvel at the "Drunk on a Lamppost" coaster holder (\$25), a Floridashaped ashtray (\$12), Art Deco nude bookends (\$125), and other kooky artifacts. Categories include smoking accessories, bar supplies, clocks, kitchen and dining

ESSENTIALS

SHOPPING MALLS

SHOP@AOL

[AOL keyword: shopping] Use the store directory to find a specific shop or browse by categories. Look for specials in the Bargain Basement and sign up for the weekly Deals & Steals newsletter.

YAHOO! SHOPPING

[shopping.yahoo.com] Search by category or keyword to find featured products and thousands of stores. Register to earn Yahoo! Points you can use to buy wares, bid in auctions, or exchange for gift certificates.

MALL.COM [mall.com]

Hit the Main Shopping Floor to link to brand-name stores, or create your own My Mall page.

STORERUNNER

[storerunner.com]

If a search yields no results, the site will e-mail you when it locates the desired product, on or off the Web.

wares, planters, decorative pieces, vanity items, and clothing. Orders are submitted by e-mail rather than a shopping cart, but Potts makes up for it with her whimsical descriptions. Hagglers are welcome! [kitschykoo.com]

COMICS COSMOS Frag-

City.com Star Wars icon Mark Hamill is the chief creative officer behind FragCity, a sci-fi community that sells comics, games, and toys. Your computer may need the Force to power through this animationrich site, but the payoff comes in





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ESSENTIALS

BOOKS, MOVIES & MUSIC

AMAZON.COM

[amazon.com] The megasite is still the best at what it started out doing in the first place—selling books-although the music selection has grown.

CDNOW

[cdnow.com]

In addition to CDs and downloads in almost every musical genre, you'll also find news, interviews, and video clips.

BOOKSAMILLION.COM

[booksamillion.com] Consistently low prices on new books. Club members receive an extra 10 percent off.

MOVIEMALLS.COM

[moviemalls.com]

Shop by movie to get your videos, DVDs, posters, and other paraphernalia.

BARNES & NOBLE.COM [bn.com]

Search for out-of-print and rare books. Listen to one of the site's 17 radio stations while you shop.

stellar newsprint collectibles. Click the Comics link to find new releases. specialty items, and rare issues. Mere Earthlings will surely enjoy the adventures of Superman and

Spider-Girl, while fanatics will thrill to the more arcane tales of Aliens vs. Predator. An issue can cost from a few bucks to over \$50, depending on rarity. [fragcity.com]

SPORTS STOP Fritsch

Stumped as to what to get the couch jockey in your life? Try sports cards immortalizing baseball, basketball, football, hockey, and yes, wrestling legends. Proprietors Larry and Jeff Fritsch boast the largest selection of sports cards in America -65 million by their count. The AltaVista site search is clunky, but stay the course to find the games' champs and chumps from the 1880s to the 1980s. [fritschcards.com]

-HEIDI LAFLECHE

Gourmet Gifts

CHEF CENTRAL Tavolo If

the way to a loved one's heart is through the stomach, then Tayolo provides the best map for getting there. Partnering with the Culinary Institute of America, it offers a wide array of merchandise for every phase of gourmet food preparation and presentation. Whether you're looking for a hard-to-find specialty ingredient, top-quality cookware, or elegant tableware, you'll find it here, often at bargain prices, [tavolo.com]

TIS THE SEASONING The

Spice House A cook is only as good as the ingredients she uses. and when it comes to seasonings. fresh ones are best. Of course, not everybody has an herb garden. This store offers the next best thing: recently dried and ground herbs and spices, hand selected and hand prepared. Gift boxes from Ethnic Chicago Seasonings pack a multicultural selection of aromatic blends from that city's diverse ethnic traditions. [thespicehouse.com]

GIFT-WRAPPED RECIPES

Gourmet Guides No matter how original a cook claims to be, there isn't one anywhere who doesn't peek at recipes once in a while in order to steal ideas from the competition. You'll find a nice selection of specialized titles in stock at this discount cookbook store, and nobody

CHOCOLATE

has to know that you bought the sweet

BIBLE little volume on northern Italian cuisine at 50 percent off. [gourmetguides. coml

> **LUXURY TREATS Dean &** DeLuca Don't go empty-handed to

those Christmas parties. Give your hosts something imaginative from the online outlet of New York City's famous SoHo food store, such as a log of truffled goose fole gras or a strand of chocolate pearls. Prices range from a few bucks for the house honey mustard to more than \$1,000 a pound for Belugia caviar, Many items come packaged in handsome baskets, boxes, and crates. [deandeluca.com]

-FRANK GREEN

Folk Art

GLOBAL MARKETPLACE

eZiba.com Authentic

native folk art was once available only to intrepid travelers who could afford guided safaris, pith helmets, and a year's leave of absence. Today, an entire world of indigenous crafts is at your fingertips. Eziba offers an excellent selection of high-quality folk art, with large-format photos of each item. Among them: an Afghani lapis necklace (\$29), an unusual Zimbabwean watering can (\$70), and fine Chinese silk paintings (\$495). Video clips and articles showcase the work of such artisans as Talavera potters in Puebla, Mexico. [eziba.com]

CRAFT COLLECTIVES

Global Exchange Purchases from Fair Trade crafts help support individual artisans and collectives in some of the world's most impoverished areas; colorful cloth Mai Dolls (\$9.50), for instance, are made by former street children of Ho Chi Minh City, Vietnam. An adorable Alpaca teddy bear from Peru is just \$16, Djembe drums from Senegal are fair-

ly priced at \$250, and a hand-painted Balinese bat kite-our favorite-runs a modest \$35. Gifts include gourmet foods packed into baskets that were woven by hand in Bangladesh, as well as coffee grown by farmers getting technical assistance in organic farming. [store.globalexchange.org]

TRIBAL ARTIFACTS Art-Pacific.com A decorated phalThis gift basket from Tavolo packs a taste of the Mediterranean (\$60).

locrypt (penis gourd, \$80) from Papua New Guinea, is just one of the unique pieces in Art-Pacific's interlinked Oceanic and Indonesian Web galleries, International tribal art and one-of-a-kind artifacts are gathered from faraway places ranging from the Solomon Islands and Australia to Panama and Molas, Resources include travel tips, reading lists, art history, and maps. [art-pacific.com]

SPIRIT OF THE MAYA Art

Center Exports After stumbling across a piece of slate while working in a field in Belize, the Garcia sisters were inspired to carve it into a whale. Emboldened by this experience, the sisters consulted their elders and archaeological experts in order to revive the long-lost tradition of Mayan slate carving. Today, their Slate Carving Gallery features

Angel and moose sachets from eZiba.com (\$38 each).



GOT 64MB

OF HEART POUNDING

3D GAMING POWER

"The RADEON" is a total package, combining blazing-fast, spectacular-looking 3D with excellent DVD playback"

MAZIMUM PC, OCTOBER 2000.

You said gimme the ultimate 3D gamer board and ATI did with the award-winning RADEON™ 64MB DDR. RADEON™ 64MB DDR delivers hurricane-force, realistic 32-bit true color 3D graphics, has the most comprehensive support for DirectX® 8.0 so you can play all the top 3D games now and in the future and features industry-leading DVD playback. RADEON™, now you got it. Now you get it — all.







WebGuide HOLIDAY SHOPPING





such indigenous notables as the Rain God Chac (\$450) and the God of Sport, Ku Basha (\$300), As befits a symbol of prosperity, the Mayan High Ruler is priced at a cool thousand bucks. [awrem.com/ tanah/art-center.html]

-- LORENA HAVENS, CARL FRANZ

Microhrews

BEER OF THE MONTH CLUB I-800-Microbrew For \$30 a month, Santa will make 12

stops to your favorite beer hound's doorstep with three different fourpacks of microbrews selected from around the country. The site offers extensive write-ups on every brewery and variety of beer: Ready for some Blind Man Espresso Stout, Igloo Ale, or Three Finger Jack Roasted Red Hefedunkel? You can order online, but you must confirm with a follow-up phone call. And, as with all the online beer clubs, two caveats exist: Customers must be 21 or older, and certain states are not on Santa's route, so check each brewery's order page for eligibility. [800microbrew.com]

CALIFORNIA SWIGGIN'

Beer on the Wall The California Microbrew Store & Gift Shop offers an almost endless selection of the state's best beers, with two Bunch of the Month Club deals: six- or I2packs that include a free I3th month with each yearlong order (prices vary). Lucky recipients can specify their preferred delivery dates. A large Special Offers section and a humorous newsletter satisfy the thirst for information. And, as an special bonus, most orders are packed with freebie coasters and openers. Online orders are fine. [beeronthewall.com]

ROCKY MOUNTAIN HIGH

Colorado Microbrew Club The clubs here are \$25 per month

(with a two-month minimum) for chimnev deliveries of three four-packs of Colorado's finest. Other options include prepackaged sets, with choices from Beginner Beers to Mountain Man Stouts. or I2-packs chosen bottle by bottle for \$1.45 aniece. Selections are perhaps best made from the regional breakdown page, as the massive list by style is long in loading. Online orders are accepted. [coloradobrew.com]

AH, THE MEMO-**BIES! Beer Collec**tions For those with sen-

timental attachments to past quaffings, there is always brewery paranhernalia. This site offers slews of coasters, labels, crowns, bottles, and glassware from dozens of micros; don't miss the specials on pint glasses. As collectors should know, all the bottles are factory empties, so you don't have to worry about age restrictions or statedelivery laws. And they're perfect for making holiday toasts while

Alt. Music

FOR MIX MASTERS Dusty

playing air guitar. [beercollections.

-- DONALD MILLER

Groove America Mint tracks by the Meters and James Brown jam beside the latest grooves by Japanese soul sensation Monday Michiru in this multifarious mix of dancehall beats. The crib's cache includes everything from funk, soul, disco, hip-hop, and trip-hop to calypso, jazz, salsa, and world beat. It has CDs, tapes, and vinyl, both new and used-with promises that the secondhand stuff is up to snuff. Delight your resident raver with underground jams in the subway series of mix tapes by Chicago's

DARK CHRISTMAS: Visit Middle Pillar Distribution for cult classics from bands like the Cure (right).

famed DJ Third Rail. or outfit your favorite scratch master with plastic record sleeves, a red portable phonograph, and a canvas bag to carry his arsenal. [dustygroove.com]

FOR GOTHS

Middle Pillar Distribution An anti-Christmas mecca for those who trim their trees with pentacles and inverted crosses, this site features hard-to-find imports and esoterica from gothic. ambient, magick, and industrial labels. You'll find dark standards such as the Cure cued up here, too, alongside reissues of classics you missed the first time around, Prices

fall below those at most Web sites or specialty record stores. [middlepillar.com]

FOR RASTAS ReggaeCD.

com Snag a natty catch of rastafied Christmas carols, from Bunny Maloney sweetly singing "Silent Night" to Yellowman ranting "Santa Claus Never Comes to the Ghetto." Yule tunes are just one stripe of many in the site's comprehensive and easily searchable catalog of reggae, rocksteady, dub, and ska. Buy six titles and get one free; shipping is free in the U.S. and Canada; and the store will conduct a worldwide search in the unlikely event that the title you seek isn't already in stock. [reggaecd.com]

ESSENTIALS

KID STUFF

ETOYS.COM [etovs.com]

Shop by age, brand, or category at this comprehensive site, E-mail your child's wish list to relatives and friends.

SMARTERKIDS.COM [smarterkids.com]

Find educational toys designed for infants through teens. Get free shipping after your first \$150 in purchases.

ESTYLE

[estyle.com]

This slick shop stocks attractive maternity apparel. baby gear, kids' clothing, toys, books, and nursery furnishings.

DELIAS.COM [delias.com]

Fun and affordable fashions for teen girls are easy to buy using the convenient sizing chart.

FOR PUNKS Interpunk: The **Ultimate Punk Music Store**

This is the pit to pogo to for hard-core swag, from rare show fliers for classic bands like Circle Jerks to the latest CD by Rancid, You can stuff the fishnet stockings of brash punk puppies with Manic Panic hair dyes and spiked leather chokers. And there's a decent enough selection of vinyl, T-shirts, posters, and zines to fill some holes in the collection of your iaded old-school uncle. [interpunk. -FRANK GREEN



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Holiday shopping shouldn't be an extreme sport. At Gear.com, we find bargains on last season's gear and sell it at 25% to 75% below retail. Not the crummy stuff, either, but exclusive deals on top brands like The North

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WebGuide LIFESTYLE & COMMUNITY

THE HOME FRONT BY CHRISTY EPSTEIN



Clicking Beyond Christmas

The Net can help you celebrate the season's other rich traditions

T'S BEGINNING TO LOOK A LOT LIKE KWANZAA. Get used to the sound of that. In the first holiday season of the new millennium, the red and green of Christmas may still dominate, but many Americans are choosing to celebrate the holidays in their own ways. The Net reflects the changing tide: Searches for Kwanzaa, Hanukkah, and winter solstice yielded thousands of results.

KWANZAA [officialkwanzaawebsite.org] features the philosophy of Maulana Karenga, the African-American professor who created the holiday in 1966. It describes in detail the African principles upon which the seven-day celebration is based, and it provides a step-by-step guide to embracing Kwanzaa for the first time. You can purchase a wooden unity cup and other ceremonial items at THE MEE COMPLETE KWANZAA KIT [meekwanzaakit.com].

Thanks to Sen. Joseph Lieberman's high profile, Hanukkah is sure to get a boost this year. HAPPY CHANUKAH [holidays.net/chanukah], spon-

ABOVE: Kwanzaa lights up the holidays. RIGHT: The Web is hog heaven for bikers. sored by the Jewish Post of New York City, can enhance anybody's Festival of Lights enjoyment. It gives the holiday's history, which you can read while listening to "Dreidel, Dreidel, Dreidel" or lighting a virtual menorah. Check the recipes and whip up some pickled herring for relatives who are firmly rooted in the last century. Just don't tell them you ordered your Hanukkah gelt online.

Celebrations of the winter solstice spawned many of the symbols we now associate with Christmas, such as Santa Claus, wreaths, and mistletoe. To better understand the holiday's pagan roots and rituals, pay a visit to WINTER

SOLSTICE [circlesanctuary.org/pholidays/ WinterSolstice.html], a simple but well-researched site. It provides suggestions for seasonal ceremonies that all families can enjoy, such as lighting a Yule log, or scattering sunflower seeds outside for wild birds to feast on Such activities could be the perfect antidote to the mall, where you've probably been spending most of your time.

LIFESTYLES

Biker Culture

ROAD MAP BikerMania The Web is the only place on earth you can find more bikers gathered together than at the annual Sturgis Bally in South Dakota. At such a crowded virtual fest, it's easy to get lost, BikerMania offers safe haven and sage tips, pointing out the right road to what you're looking for. whether it's a new pair of wheels. an outback chapter of your outlaw clan, a roadhouse saloon starring Jack Daniels and Jim Beam, or a girlfriend who likes to ride sidecar. [bikermania.com]

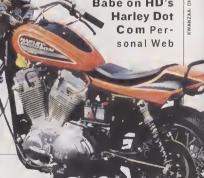
PIT STOP Motorcycle Online

Founded in 1994, this site bills itself as "the world's largest and mostread digital motorcycle magazine," and the editors work hard to earn reader trust and loyalty. Avoiding the manufacturer-driven reporting of many biker publications, they place news and product reviews in the context of journalistic truthfulness and unbiased consumer interest. Video clips in the multimedia archive are slow to load, but once your player revs the engine, the sounds are delightfully deafening. [motorcycle.com]

CHOPPER SHOP MotorcycleShopper.com If you're the type who prefers a flea market to a shopping mall, this is the cycle shop for you. Cruise through thousands of classified ads from individuals and

dealers to find bargains on everything from racers, hogs, and dirt bikes to carburetors, repair manuals, and plus-sized leather chaps. [motorcycleshopper.com]

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you decide to buy without the other, think twice. Think DirecDuo-the only way to get DirecPC and DIRECTV



WebGuide LIFESTYLE & COMMUNITY



sites are nearly as popular among bikers as tattoos, and this bitchin' page is one of the best. Created by a biker babe who wears her generic moniker proudly, it's packed with graphics, games, jokes, recipes, and event listings. [babeonhd.com]

OLD-TIME HOGS The Motorcycle Museum Online A bit of history only adds to the romantic mystique of two-wheelers. This scholarly site juxtaposes famous brands with lesser-known models from New Zealand, Russia and Spain, Brief chronologies of key engineers and companies lead to detailed information about-and pictures of-their most celebrated creations. [tower.org/museum]

-FRANK GREEN

HOUSE & HOME

Winter Gardening

FOURTH-SEASON GREENERY Gemma's

World: Gardens For most people, autumn leaves and chilly breezes signal that it's time to put away the garden tools. At Gemma's World, however, winter offers an exciting challenge: "Snow is beautiful, but plants in the snow are even better." Recommendations include shrubs that bloom when the temperature drops, trees with unusual bark or colorful fruit, hardy evergreen plants, and interesting ornamental grasses. Learn how to extend your growing season using cold frames and hotbeds. Although the site is sorely in need of a copy editor, the information is first-rate. [www. gemma.ndo.co.uk/garden.htm]

SNOW FALLING ON **CARROTS Two Rainv Side Gardeners: Winter Vegetable** Gardening In the maritime Pacific Northwest, wintry precipitation can't dampen the satisfaction of fresh Brussels sprouts and crisp carrots plucked from January's mucky soil. Travis Saling suggests planting dates for winter vegetables, and he explains the advantages of raised beds, mulch, cover crops, cloches, and simple PVC "hoophouses." He also provides book recommendations, articles such as "Kale, Queen of the Winter Garden," and a link to the Territorial Seed Company, an excellent resource for cold-weather cultivators, [rainyside.com/edibles/ winter_veggies.html]

WINTER WARMTH Homestead Links: Greenhouses A greenhouse offers shelter and cozy comfort for you as well as your plants. Start with Greenhouse Basics, and you can progress to Designing the Passive Sunspace and do-it-yourself construction. Stop by the Greenhouse Forum for tips about double-layer plastic walls and thermal storage. [segues.com/homesteadlinks/ Gardening/Greenhouses]

DI ANNING FOR SPRING

Garden.com The pleasures of winter gardening also include browsing seed catalogs and daydreaming about spring plantings. To get a jump on warmer weather, check out the LandscapePlanner in the Design a Garden section. Using colorful, modifiable templates, the Planner gives do-it-vourselfers the thrill of visualizing a garden design. complete with a list of suggested plants, which you can put into a shopping "wheelbarrow" and buy online, [garden.com]

-LORENA HAVENS, CARL FRANZ

ACTIVISM

Gun Control

MOTHER KNOWS BEST

Million Mom March Foundation Headlined by such highprofile activists as Rosie O'Donnell, the Million Mom March drew hundreds of thousands of gun-control advocates to Washington on Mother's Day. The campaign continues online, where you can access local chapters and learn how to start your own branch, The You Can Help section makes it easy to write to politicians, A mandate of the foundation is helping gun-violence victims, who can find many helpful resources here. [bellcampaign.org]

OLD PROS The Coalition to Stop Gun Violence Now in its 26th year, the IOO, OOO-member coalition calls for an outright ban on the sale and possession of assault weapons and handguns. Get the gunlaw voting records of legislators, find out whom the National Rifle Association is wining and dining, and check the Action Guide for upcoming referenda in your state. [gunfree.org]

STATE OF THE STATES

Gun Control in the United States Produced by the Soros Foundation's Open Society Institute, this site's report can be downloaded as a PDF file. It explores the trafficking of weapons from states with weak gun laws to states with stricter laws, underscoring the need for federal guidelines. [soros.org/crime/ guncontrol.htm]

STOP OR LILL SHE

Firearms Litigation Clearinghouse According to this site, civil litigation is just as important as legislation. Of the estimated 4.500 accidental shootings that occur in the U.S. every year-about I.000 of which are fatal—fewer than IO percent are reviewed by lawyers. An excellent resource for activists. attorneys, and potential plaintiffs. the site offers downloadable PDF files of gun lawsuits past and present, as well as information on the legal rights of shooting victims. [firearmslitigation.org]

THINK TANK Violence Policv Center The center studies

ways in which gun violence affects society, approaching what it calls the "gun crisis" as a public-health issue. The site includes sections on women, seniors, and kids.

-TIA KEENAN [vpc.org]

ESSENTIALS

FESTIVE FOODS

CHRISTMASRECIPE.COM

[christmasrecipe.com] A plethora of main and side dishes, beverages, desserts, and vegetarian options, plus meal planners and preparation tips.

CHRISTMAS COOKIES

[homearts.com/gh/food/ 12cookf2 html

Cookies, cookies, and more cookies-25 recipes in allfrom Good Housekeeping magazine, including rugelach and shortbread.

EPICURIOUS: HANUKKAH

[food.epicurious.com/b_ba/ b02_menus/hanukkah.html] Four menus that evoke Hanukkah traditions around the world.

GRANDMA'S HOLIDAY DRINKS

[b4uby.com/granny/ holiday.htm] Not quite what you'd expect from Granny: three different

eggnogs, a Christmas liqueur, and "Frozen Passion."



:// WebGuide | LEARNING & CREATIVITY

BRAIN WAVES

BY KEVIN DELANEY



Patent Sleuth

Helpful hints from the U.S. Patent Office

FTER SIX MONTHS OF TRANSFORMING L.A.'S CHLORINE-saturated H₂O into water as pure as a mountain spring, my shower filter hinted it was time to replace the cartridge when my morning ablutions left me smelling as if I had just taken a dip at the local public pool. ■ I would have inquired at the hardware store where I bought the filter, but it had since become a Starbucks. And to make matters worse, there was no brand or model name on the unit itself. I searched the Web for *shower filter* and *water purifier*. I scanned dozens of photos, hoping to find a device like mine. No such luck.

Then I noticed a piece of information on the unit's plastic casing that I had overlooked: an embossed patent number (No. 5,503,742). So I logged on to the UNITED STATES PATENT AND TRADEMARK OFFICE [www.uspto.gov] and...eureka! Using the site's database, you can enter a number and view the complete record. Within seconds, I not only had the inner workings of my filter displayed on my screen but also learned the name of the inventor and his company. One phone call to the firm, and I was off to a nearby store where I could buy a new cartridge.

The Patent and Trademark Office site is a fascinating—and addictive—resource. I've since pored over patent records for my juicer (No. 6,050,180), camcorder (No. 5,469,211), and blender (No. 5,360,176). Just locate the record for the item you want, then click Images. It's fun learning how your everyday appliances operate, and it sure beats trying to open 'em up and put 'em back together again yourself!

PUBLIC SCHOOLS

Arts Education

ACTION ALLIANCE Arts

Education Partnership Demand is growing for the visual and performing arts to be taught in U.S. schools-to keep kids interested in learning, provide creative outlets for troubled youths, and produce well-rounded people. This attractive and practical site is supported by a coalition of local and national organizations. Read student success stories from schools with arts programs and learn how to obtain publications and videos vou can use to make the case for the arts in your local system. [aep-arts.org/aephome.html]

EXTRA CREDIT Coming Up

Taller To get art curricula into public schools, sometimes you need to be imaginative—which could include expanding the normal school day. This well-organized site introduces visitors to more than 200 afterschool, summer, and weekend programs that have worked. Many were developed for at-risk youths, but they can be enriching for everyone. [www.cominguptaller.org]

MASTER TEACHERS Arts

for Learning Created by Young Audiences, the nation's leading provider of educational arts programming, Arts for Learning aims to connect artists from all disciplines with the

kids who can most benefit from their talents. Launched in the Pacific Northwest, AFL provides a map on its site that lets you connect with participating programs nationwide. Chapters in San Jose and Silicon Valley, the San Francisco Bay Area, and greater New York and Miami were rolled out in September, with other regions to follow soon. Check Meet the Artists to search for instructors, who range from storytellers to sculptors to African-drumming masters. [arts4learning.org]

-ADAM McGOVERN

MIND GAMES

Brainteasers

OFFICE BOGGLERS Dil-

bert.com: Daily Mental Workout Tap what you've learned from your seventh-grade math teacher and from clawing your way up the lower rungs of the corporate ladder. Puzzles are divided into Your Boss's Brain (for management) and Your Brain (for drones). [dilbert.com/ comics/dilbert/ddmw]

SPEED BUMPS Car Talk:

The Puzzler Between calls about squeaky brakes and shaky relationships on their National Public Radio Car Talk show, Tom and Ray Magliozzi present a Puzzler that "sometimes has to do with the inner workings of cars" but more frequently involves "things like the bubonic plague, electric trolleys in Brooklyn, or the urgent need for a haircut." Tackle a new Puzzler every Monday online. [cartalk.cars.com/Radio/Puzzler]

THE SMART SET Mensa

Workout The geniuses at Mensa have devised a devilish little quiz to help the rest of us mortals gauge our mental abilities. The workout mixes mathematical, verbal, and spatial challenges. Sorry, good marks won't get you admitted to the elite brain trust. [mensa.

org/workout]
-HEIDI LAFLECHE



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MICHARIAN VENCEANCE

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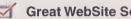
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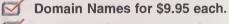
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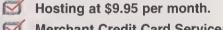


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HOW TO GET THE MOST NET IN THE LEAST TIME EDITED BY ROB BERNSTEIN

FIND BY CHARLES PAPPAS

Believe it or not, there are alternatives to Microsoft Internet **Explorer and Netscape Navigator**



HEN IT COMES TO CHOOSING A browser, most surfers think they're stuck with only two options: Microsoft Internet Explorer or Netscape Navigator. Truth is, there are dozens of alternative browsers out there. And unlike Explorer or Navigator, these browsers work on older systems, boot up quickly, and require little hard-disk space.

The most popular alternative browser is OPERA [operasoftware.com]. The software's non-Java version is a wee 1.8MB. Despite its modest size, the program is feature-rich. It offers a history list, e-mail, cookie management, and an option to tile or cascade multiple open browser windows. Opera is free to try, and \$39 to buy.

Another browser that treads lightly on your system is IX [scitrav.com/IX]. The program actually fits on a single floppy disk and can handle most multimedia formats. This svelte browser also offers caching, outgoing e-mail, SSL security, bookmarking, and support for tables and frames.

For a really bare-bones browser, get LYNX [lynx.browser.org]. It won't support frames, Java, JavaScript, or ActiveX. Heck, it won't even support graphics and can be navigated only using a keyboard. But it's fast, it runs smoothly on old computers, and it works with Braille or screen-reading software.

There are other browsers available to surfers, such as ICAB [icab.de], a Mac-only browser, and ARACHNE [arachne.browser. org], a program that runs on DOS-based systems. For a full list, check out the Yahoo! Browsers category or click to CNET INTERNET: BROWSERS [browser.com].

STAND BY ME

In September, Microsoft released an upgrade to Windows 98 called Windows Me. It's not revolutionary, and the programs that come bundled with it-such as software for digital photography—are pretty basic. Still, the operating system is stabler than Windows 98. Net users with multiple PCs will especially like Windows Me's Home Networking Wizard, which makes sharing PC resources a snap. The OS also includes something called System Restore, which lets you



revert your PC to an earlier state; this is particularly helpful in recovering your system when it crashes. The software upgrade costs \$109, but Microsoft is selling the upgrade for \$60 through January 15. A reasonably good price for reasonably good software.

CHANGE OF VIEW

Are you having problems sharing attachments with a friend because of incompatibilities in operating systems? Get CLICK TO CONVERT [clicktoconvert.com]. The program turns PC files into HTML, making them viewable in most Web browsers. The PC-only program is free to try and costs \$149 to buy.

POWER PLAY

Surfers who tend to leave their PCs on for hours at a time can conserve electricity by customizing Windows 98. Follow the path Start/Settings/ Control Panel/Power Management and select the Power Schemes tab. Then choose either Home/Office Desk or Portable/Laptop and set how long you'd like your PC to wait before shutting off the monitor or the hard disk.

:// WebUser

LEARNIT BY LOU DOLINAR

Before you deck the halls with tech toys this holiday season, log on for shopping advice



CHECK THE BUZZ

During the holiday shopping season, it's not uncommon for companies to rush products to market—flaws and all. Before you pay top dollar for that spankin' new personal computer, stop by **ecomplaints.com**, **deja.com**, or **epinions.com** to read what consumers are saving about it. And if you've ever been burned by a faulty CD-R drive or some other piece of equipment, feel free to post your own warnings at the sites. Also check in at **SAFETYALERTS.COM** to see which products, if any, are being recalled. Newsgroups are another great source for late-breaking news on electronic consumer goods. ALT.SYS.PC-CLONE.GATEWAY2000 and **ALT.SYS.PC-CLONE.COMPAQ** are specific to particular brands, while groups such as ALT.COMP.PERIPHS.DCAMERAS cover entire hardware categories.

TEST THE GEAR

For tech wonks, there's nothing more annoying than presents that refuse to boot up on Christmas morning. Consider installing any software or hardware gifts on a PC several days ahead of time to make sure they work properly and are compatible with your loved one's computer. Also visit the manufacturer's or publisher's Web site to see if your gift requires any software updates.

If the hardware or software you purchased is not in good work-



SANTA'S HELPERS (clockwise from left); Pay for live technical support at Expertcity; receive free advice via e-mail from Protonic.com; find out about holiday product recalls at SafetyAlerts.com.

ing condition, return it immediately. Retailers usually let customers return or replace technology purchases within a week's time, no questions asked. If you wait too long, you'll end up dealing with extended manufacturer warranties, which usually require a visit to a service center. And some manufacturers won't pay shipping costs if a part malfunctions.

SEEK OUT TECH HELP

Dialing a tech support line during the holiday season is a nightmare for anyone. Call volume is way up at this time of year, and it can be incredibly difficult to get a live human being on the phone. At PROTONIC.COM, however, a team of volunteer tech support experts promises to answer your tech support questions within a 24-hour period. And the service is free.

You might also click to ASK-A-TECH.ORG, which offers a similar tech support service. If you're willing to pay for help, head to EXPERTCITY.COM or EPEOPLE [epeople.com], where you can have your questions answered posthaste. Another good bet is PC-HELP **ONLINE** [pchelponline.com], a clearinghouse with scads of links to manufacturers, tech support newsgroups, and other resources.

LOU DOLINAR WRITES THE "PLUGGED IN" COLUMN FOR NEWSDAY.

Santa's little helper.



A bonus issue devoted to online holiday shopping

On sale at newsstands November 28, 2000



WebUser

If e-mail is your primary link to the rest of the world, consider using the king of mail programs, EUDORA [eudora.com]. The latest version of this powerful software, Eudora 5.0, comes with all the bells and whistles: spam filters, an address book, a spelling checker, and more. New features include a file-sharing option, e-mail usage statistics, and "MoodWatch," which warns you of objectionable words in incoming and outgoing messages. The ad-supported version of the software is free, and Eudora 5.0 works on systems running either Microsoft Windows or Mac OS.

Printing a readable version of a Web page is no easy task. Often paragraphs of text vanish: words appear too small to be read; and some pages print with only a few lines of text on them. If you want



to get more control over your printouts, as well as save toner, download and install FINEPRINT [fineprint.com]. The program can print multiple pages on a single sheet of paper or print pages in a booklet format. It can also add graphics and watermarks to your stationery. The PC-only program is free to try and \$40 to buy.

Protect computer files from prying eyes with LOCKIT [www.lockit. com], a system-tray utility that blocks people from viewing your desktop. The program can be customized to shut down your system automatically if anyone attempts to access its software or data. LockIt requires Windows 95 or 98 and is free for the demo version, \$50 for the full version.

TRY BY ALICE HILL

New digital video recorders may change the way you watch and experience television

HE GUT REACTION I HAD TO RECENT COMmercials for new electronic equipment called digital video recorders was, Who needs it? These set-top boxes record television programs to a giant internal hard drive and are capable of pausing and rewinding television broadcasts. Upcoming versions of ReplayTV will allow users to program the device from the Web (another service, TiVo, has no such plans). I already know my way around a VCR and have a great home theater system, so I wasn't sure why I would need or want a digital video recorder. In short, I had no idea what I was missing.

It's no overstatement to say that TiVo (a service for Philips and Sony recorders) and ReplayTV (for the Panasonic ShowStopper) take home entertainment to a whole new level. For starters, they allow television viewers to search through hundreds of channels and thousands of show listings within seconds. Using a remote control, you literally point and click your way through a presorted and categorized guide that pops up on your boob tube. Next, you pick and choose the shows you want to record. No programming is necessary.

You can also instruct your digital video recorder to save your favorite programs automatically for an entire season. Yes, the days of slogging manually through page after page of TV Guide are over. Furthermore, the recorders do not require the use of clunky VCR tapes.

The systems can record up to 30 hours of television (newer models will be capable of recording up to 60 hours). With all that storage space, you'd be surprised at how fast you can fill up the hard disk. My digital video recorders maxed out in just a week's time, crammed with episodes of Charlie's Angels. Luckily, the units can hook up to your VCR, in case you need that as your backup.

Setting up a digital video recorder is no walk in the park, but its makers have worked hard to imagine every home entertainment scenario. The set-top boxes include audio, video, and satellite cables. They also come with phone cords so you can connect the units to a phone line for TV scheduling updates.

TiVo was the clear winner in providing options for connecting the digital video recorder to older TVs. It also boasted a simpler software interface and more-concise



VCR SLAYER? ReplayTV's digital video recorder.

electronic show listings. On the other hand, it took two days before the unit was able to dial up and access Philips's servers for an initial setup call. TiVo says it's adding more servers to handle logiams and now offers TIVO: CUSTOMER CARE [tivo.com/care/care.html].

If you're familiar with cable box or satellite dish network controls, you may feel more comfortable using ReplayTV's television guide interface. As for pricing, recorders made for TiVo cost \$400, and those for ReplayTV are \$600. But TiVo charges an additional \$10 per month for its service, or \$200 for a lifetime subscription. ReplayTV does not charge a subscription fee. At press time, both systems came with \$100 rebate offers.

Fee or no fee, I can no longer do without a digital video recorder. In fact, this equipment has totally changed my television-viewing habits. You can zap through commercials. And both systems have a pause feature that's great for moments when you're interrupted during, say, a football game—so you'll never have to miss that touchdown pass again.

ALICE HILL IS A CONTRIBUTOR TO THE INDUSTRY STANDARD AND THE NEW YDRK TIMES.

BUYIT? When All Is Said and Done...

TiVo has a better software interface and a simpler remote control. ReplayTV will soon let you use the Web to program shows and doesn't charge a subscription fee. You'll have to decide which features are most important to you.

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:// WebUser

SEARCHALERT

BY DANNY SIII I IVAN

Popular portals **get lean and mean**, offering powerful search features and little else

URING THE PAST THREE YEARS, SEARCH PORTALS HAVE SPENT millions of dollars adding nonsearch features to their sites, such as free e-mail, free home pages, multiplayer games, and stock portfolios. Today, these same sites are offering stripped-down versions of themselves that focus entirely on Web listings.

Earlier this year AltaVista launched RAGING SEARCH [raging. com]. Under the hood, this service has all the power of AltaVista, but the site eschews banner ads and portal features. Raging Search lets surfers customize the site's look in a way unmatched by any of its competitors. For instance, you can control what kinds of information are displayed in search results, such as a page's Web address or description. You can even choose from one of 12 color schemes for the site; I'm a fan of eggplant.

Like AltaVista, HOTBOT: TEXT-ONLY VERSION [hotbot.com/text] has no portal features. But the site still lets you filter queries and search for pages by title, date, or language. It also offers advanced search options, and can find sites with MP3, video, and image files. Similar offerings can be found at SEARCH.GO.

COM and EXCITE: PRECISION SEARCH [excite.com/search], which



STRIP SEARCH: At Excite, surfers can opt to toss the portal clutter.

offer special search tools and tips to help you narrow your queries.

Of course, removing portal clutter is primarily a cosmetic change and won't mean better search results. Nevertheless, these new services simplify the search experience and give surfers more control over queries. Let's hope other major portals, such as YAHOO!

[Vahoo.com] and AOL.COM, follow suit.

DANNY SULLIVAN RUNS SEARCH ENGINE WATCH [searchenginewatch.com].

SURFGURU

Register your own domain name; create a clever signature file

Where do I go to register a domain name?

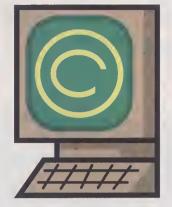
Once upon a time, a company by the name of **NETWORK SOLUTIONS** [networksolutions.com] was the only registrar of Web addresses on the Internet. Today, more than 50 companies can take you through the registration process. Prices vary, but it's not uncommon for these services to charge surfers \$35 a year to reserve

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What is a .sig file? People keep telling me I need one.

The term .sig stands for signature and refers to the block of text that some surfers attach to the end of their online correspondence. Your .sig may contain your name, your Web address, or a pithy quote. Here's how to create one for your-

self in Netscape Messenger and Microsoft Outlook Express.

NETSCAPE MESSENGER: Open your word processor and create a new document. Type in your .sig exactly as you want it to appear. Saveit as a text-only file. Then open Navigator, click the Communicator menu, and select Messenger. This will launch the Netscape Inbox window. Click the Edit menu and select Preferences. Under the category heading Mail & Newsgroups, select Identity. Next to the Signature File field, click the Choose button. Find your saved signature file and select Open. Click OK.

MICROSOFT OUTLOOK EXPRESS: Click the Tools menu and select Options. In the Options window, click the Signatures tab. Then click the New button and enter a signature into the text field. Click OK.

AOLWATCH

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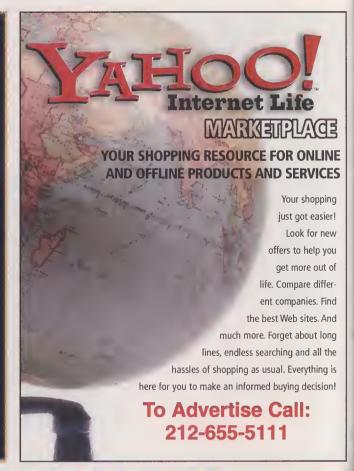




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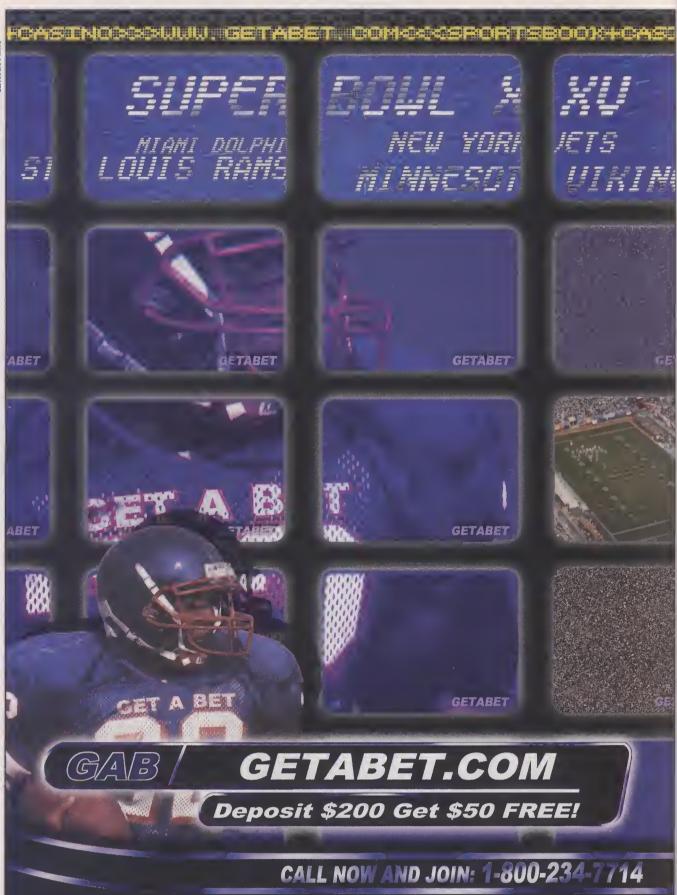
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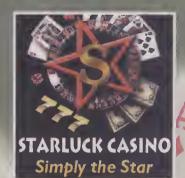
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Obscene Interiors

AMATEUR PORNOGRAPHY IS ONE OF THE STRANGER BY products of the Internet Age. But when average, everyday folk take it all off to be ogled by the rest of the Net, the most obscene thing about the photos is usually not the lack of clothes but the lack of taste visible in the background. To illustrate, the good folk at Justin-Space.com surfed the Netfor samples, then blocked out the nekkid bodies so you can focus on what really matters—those hideous drapes. And that bowling trophy. And those stuffed animals hanging from the drawers. And some all-too-visible family photos (sorry, Mom!). [justinspace.com/obscene/oiintro.html]



Britney's Guide to Semiconductor **Physics**

NORMALLY WHEN YOU HEAR BRITNEY Spears and silicon in the same sentence. you assume the worst. That's because not enough people are familiar with Britney's achievements in the design and construction of silicon chips. She's no slouch with edge-emitting lasers, either—don't miss her provocative treatise on radiative and nonradiative transitions. It turns out that "the rate that electrons will be absorbed is determined

by the number of unoccupied states in the conduction band." Isn't that rad? [britneyspears.ac/lasers.htm]

CrackerHead Mood Chooser

THERE'S NOTHING WORSE THAN GOING OUT WEARing a state of mind that doesn't match your outfit. Save yourself the shame of a "bad mood day" with the help of a Ritz cracker smeared with aerosolized cheese. Just submit your emotion of choice—such as grim, crazy, foolish, surreal, or dead—and you'll

immediately be able to see if hopeless matches that blouse. Finally, a way to explore all the feelings you thought were appropriate only at the post office.

[academic.marist. edu/carob/moodl



Leonard Nimoy Should Eat More Salsa Foundation LEONARD NIMOY IS EXCELLENT AND SALSA IS EXCELLENT.

Therefore, if Leonard Nimoy ate more salsa, clearly he would become an unstoppable force of excellence. Alas, despite the entreaties of Star Trek colleagues DeForest Kelley and William Shatner, not only has the Man Who Would Be Spock not eaten any, but he has also shown a severe aversion to the spicy Mexican foodstuff. Worse yet, rare photos from the future have confirmed that if left unchecked, Nimoy's distaste will one day turn him into a sort of salsa nazi, eradicating the tomato-based treat wherever it may be found. Won't you join up today and make the future

safe for our children's chips? [Insemsf.com]

Halfbakery

RON POPEIL WANNA-BES TAKE NOTE: You'll find more infomercial fodder than you can shake a Pocket Fisherman at in the Halfbakery. Whether you'd like to market pockets for nudists, fat-eating

bacteria, vanity postage stamps, edible Post-it GET YOUR DAILY Notes, frozen toast, or Carni-Food (meat that's shaped to look like veg-

WEIRDNESS FIX AT PRETTYSTRANGE.

etables), you're sure to find "the only product you'll ever need"—several of them, in fact. Why live any longer without chocolate lard?

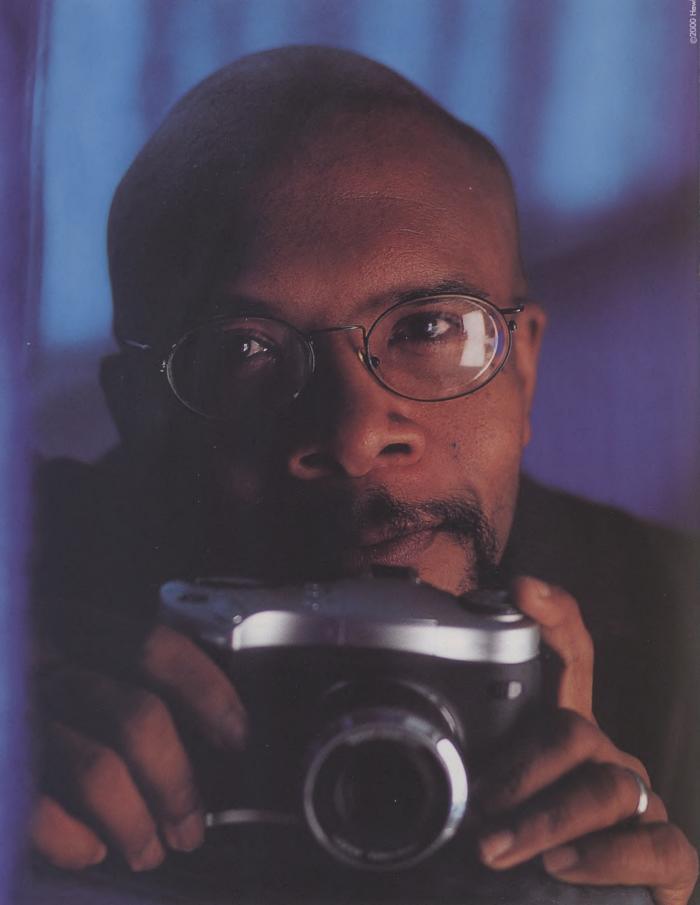
[halfbakery.com]



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Reuben Jackson. Inventor.





Inspirotian is all around us.

Reuben finds his in jazz,

Buddha, new follen snaw and poetry.

Capturing these feelings, shoring them,
requires new kinds of tools.

Digital phatagrophy far example.

Think of it as photogrophy, port 2.

Na film, na developing, keep anly the pictures you want and delete the rest. Print them of home,
without a camputer, ar even cobles.

Or send them to everyone you knaw
everywhere in the warld fram your PC right now.

Moke them, shore them, store them, invent.

Digital images fram hp. www.hp.cam



